This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

Phil 25.72

HALL
CASE

HARVARD UNIVERSITY

DEPARTMENT
OF
PHILOSOPHY

TRANSFERRED
TO
HARVARD COLLEGE
LIBRARY

THE PSYCHOLOGICAL CLINIC

A Journal of Orthogenics
For the Study and Treatment
of Retardation and Deviation

Editor:
LIGHTNER WITMER, Ph.D.,
University of Pennsylvania

VOLUME V.
1911-1912

THE PSYCHOLOGICAL CLINIC PRESS
PHILADELPHIA, PA.

Phil 25.72
✓

TRANSFERRED TO
HARVARD COLLEGE LIBRARY
AUG 4 1942
from Philosophy Library

BOUND 15 APR 1912

Retardation and deviation *would not attract much interest simply as abnormal conditions. It is their curative treatment—the processes through which the abnormal may be made to develop into the normal—that inspires the present efforts of educator, psychologist and physician.*

The **Science** *which treats of the restoration of the retardate and the deviate to normality has been in want of a name.*

The Psychological Clinic proposes for this science the name **ORTHOGENICS**, *and will employ this term to define the journal's scope and object.*

While **Orthogenics** *concerns itself primarily with the causes and treatment of retardation and deviation, it is by definition the* **science of normal development,** *and comprehends within its scope all the conditions which facilitate, conserve, or obstruct the normal development of mind and body.*

CONTENTS OF VOL. V.

ARTICLES.

Problems of the Social Worker.—*Anna Cooper Campion*........ 1

Retardation Statistics from the Smaller Minnesota Towns.—*Freeman E. Lurton* 13

Elimination and Retention of Pupils.—*Edward P. Cummings*.... 20

Educational Aspects of Christian Science.—*Charles Keen Taylor*.. 29

Classification of Clinic Cases.—*Arthur Holmes*.................. 36

Medical Inspection of Schools in California.—*Lewis M. Terman*.. 57

An Experimental-Critical Study of the Problem of Grading and Promotion.—*W. Franklin Jones*..........................63, 99

A Score of Difficult Boys.—*Ralph L. Johnson*.................... 121

Retardation in the Schools of Palo Alto, California. A Study of Pedagogical Life Histories.—*I. D. Payne*.................... 139

Retardation in the Schools of Stockton, California. A Study of 300 Pedagogical Life Histories.—*J. O. Gossett*.............. 149

The Renaissance of Bob.—*Charles Keen Taylor*.................. 158

Congenital Aphasia.—*Clara Harrison Town*..................... 167

A Speech Defect Case Treated at Columbia University.—*Alice C. Hinckley* 180

The Binet-Simon Measuring Scale for Intelligence: Some Criticisms and Suggestions.—*Leonard P. Ayres*.................. 187

The Binet-Simon Scale for Measuring Intelligence: Impressions Gained by Its Application.—*Lewis M. Terman* 199

A Study of the Binet Definition Tests.—*Isabel Lawrence* 207

A Practical Guide for the Administration of the Binet-Simon Scale for Measuring Intelligence.—*J. E. Wallace Wallin*........... 217

The Binet-Simon Scale and the Psychologist.—*Clara Harrison Town* 239

A Year's Work in a "Superior" Class.—*Flora Unrich* 245

A New Method for Determining Rate of Progress in a Small School System.—*Norman Cameron* 251, 279

School Clinics for Free Medical and Dental Treatment.—*Lewis M. Terman* 271

REVIEWS AND CRITICISM.

Wider Use of the School Plant. By Clarence Arthur Perry 24

Medical Examination of Schools and Scholars. By T. N. Kelynack, M.D. 25

Social Forces. By Edward T. Devine 54

The Health Index of Children. By Ernest Bryant Hoag......... 55

Mental Discipline and Educational Values. By William Harry Heck 128
The Individual in the Making. By E. A. Kirkpatrick 164
Qualities of Men. By Joseph Jastrow 197
Moral Instruction and Training in Schools. Report of an International Inquiry. Edited on Behalf of the Committee by M. E. Sadler 265
The World of Dreams. By Havelock Ellis 293

NEWS AND COMMENT.

The Pennsylvania Crisis 26
The Child Study Section 27
An English Journal of Child Welfare 28
The Pennsylvania Child Labor Bills 55
Relation of Physical Defects to Retardation in Elmira, N. Y. 97
Educational Aspects of Christian Science 129
Fatigue and School Work 138
Do the Elementary Schools Serve Boys Less Than Girls? 165
Extension of School Luncheons in Philadelphia 268
An Elusive Case in the Public Schools 268
International Red Cross Competitions 269
Errata 270
Vocational Guidance, An Outline 295
Miss Margaret Bancroft died January 3, 1912 297
International Eugenic Congress 298

Psych C

VOL. V. NO. 1 MARCH 15, 1911

THE Psychological Clinic

For the normal development
of every child

PSYCHOLOGY HYGIENE EDUCATION

Editor: LIGHTNER WITMER, Ph. D., University of Pennsylvania

CONTENTS

PROBLEMS OF THE SOCIAL WORKER, *Anna Cooper Campion,* in charge of the Social Service Department, University of Pennsylvania Psychological Clinic 1

RETARDATION STATISTICS FROM THE SMALLER MINNESOTA TOWNS, *Freeman E. Lurton,* Superintendent of Schools, Anoka, Minn. 13

ELIMINATION AND RETENTION OF PUPILS, *Edward P. Cummings,* Superintendent of Schools, Lansing, Mich. .. 20

REVIEWS AND CRITICISM: *Wider Use of the School Plant,* Clarence Arthur Perry; *Medical Examination of Schools and Scholars,* edited by T. N. Kelynack, M.D. 24

NEWS AND COMMENT: *The Pennsylvania Crisis; The Chi[illegible] Study Section; An English Journal of Child Welfare* ..... [illegible]6

THE PSYCHOLOGICAL CLINIC PRESS
WOODLAND AVE. AND 36TH ST.
PHILADELPHIA, PA.

PRICE, TWENTY CENT

THE PSYCHOLOGICAL CLINIC

A Journal of Orthogenics

For the normal development
of every child

PSYCHOLOGY HYGIENE EDUCATION

Subscription price, $1.50 per annum (nine numbers). Single numbers, 20 cents. Foreign subscription price, $1.75.

Published monthly except July, August and September, by Lightner Witmer, College Hall, Woodland Avenue and Thirty-sixth Street, Philadelphia, Pa.

Entered as second-class matter February 12, 1908, at the post office at Philadelphia, Pa., under the Act of Congress of March 3, 1879.

We are sure that any one who sees The Psychological Clinic will subscribe, and if he once subscribes, he will renew his subscription year after year, as the vast majority of our readers are doing. Will you give your friends this opportunity?

To save us the trouble and expense of sending out bills for renewals, we make an offer which at the same time will be advantageous to our subscribers. The regular subscription price of The Psychological Clinic is $1.50. We will accept a two years' subscription for $2.50 (absolutely net) paid in advance; and three years' subscription for $3.50 (absolutely net). This will enable subscribers to the current volume to obtain The Psychological Clinic from the beginning and including the present volume for $6.00, a saving of one dollar and a half.

Send subscriptions and all communications to

THE PSYCHOLOGICAL CLINIC PRESS

Woodland Ave. & 36th St. Philadelphia, Pa.

The Psychological Clinic

Copyright, 1911, by Lightner Witmer, Editor.

Vol. V, No. 1. March 15, 1911.

PROBLEMS OF THE SOCIAL WORKER.

By Anna Cooper Campion,
Head Social Worker.

The social service department of the Psychological Clinic was opened October 1, 1909. The necessity for establishing a personal relationship with the families of the children seen at the Clinic, created an imperative demand for social work with its attendant records of home conditions.

The duties of a social worker are both complicated and delicate, connected as they are with mental or physical suffering, conditions which require the nicest understanding and the most tactful and sympathetic attitude. In connection with the Psychological Clinic these qualities of mind and heart are peculiarly essential because the cases handled are those of children suffering from mental or moral, as well as physical defects. Acting usually upon the advice of a physician, school principal, or teacher, parents bring their children to the Psychological Clinic as to a place of last resort, in the hope that the Clinic will offer some suggestion as to the school or class where they may receive the necessary treatment or training. Disappointed at first to find that there is no school connected regularly with the Clinic, they are comforted to know that this first visit is not final, that their home will be visited, the school teacher interviewed, and a link formed between the home and the source of help.

The need of social service will be seen from the following summary of cases from October 1, 1909, to January 1, 1911:

A. Cases under observation, requiring visiting, medical attention, etc.	135
B. Visits paid to homes, schools, hospitals, and physicians	729
C. Number of children placed in hospitals	25
Number placed in boarding schools	2
Number placed in hospital schools under direct care of social worker	5

physicians, the two groups dividing between them the broad field of educational hygiene. The law provides further for the certification of each officer by the state board of education.

The law met with friendly interest in most parts of the state and unquestionably stimulated many cities to undertake the work. At the time the bill was passed only two or three cities in the state had any system of medical inspection or health supervision worthy of the name, (Los Angeles, under the direction of George L. Leslie, and Pasadena, with Dr. E. B. Hoag, leading). The progress made in two years is revealed by the returns to a questionnaire sent by the writer to all the cities of the state, in February, 1911.

At this time about twenty cities, almost exactly one-half of the population of the state, are served by some system of school medical inspection. The more important of these cities are Los Angeles, San Francisco, Oakland, Pasadena, Berkeley, San Jose, San Diego, Alameda, Redlands, Pomona and Santa Monica. About twenty-two persons (excluding nurses, who in Oakland do most of the routine of examinations) are engaged in the work. Of these nearly three-fifths are working on a schedule of half time or less. In Los Angeles, Alameda and Redlands the management of the department is in the hands of non-medical men all of whom, however, are recognized as efficient in the diagnosis of the common physical abnormalities of children. In Los Angeles and seven other cities the teachers help in the selection of urgent cases, while in other cities their work is confined to assisting with records and the follow-up service. In all but two, San Francisco and Fresno, the work is under the direct control of the board of education. The latter city contemplates changing the control from the board of health to the board of education. The pay of the school health officer varies from $100 to $3600 per year. Half-time workers (again excluding nurses) receive from $400 to $1600 yearly, full time workers from $1500 to $3600. Two of the smaller cities pay the physician a definite sum for each individual pupil examined, $0.50 in one case, $1.00 in the other. Where this is done the preliminary survey of the pupils is made by the teachers and only urgent cases are sent to the physician.

In answer to the question whether the results of the work had given satisfactory assurance of its value, the superintendents unanimously replied in the affirmative. Several sketched plans looking toward the enlargement of its scope. One city, for example, is considering the advisability of employing enough dentists at public expense to attend to the teeth of all its school children. San Jose, a city of 3000, has thus far done more in proportion to its population than any other California city in the way of free dental work. Its free dental clinic is busy from 9 to 12 each forenoon and is open to all children who are recommended to attend by the teachers. The poverty line is not strictly drawn, and about one-fifth of the entire number of pupils will receive free dental treatment in this way. The work at present is given gratis by the local dental association, but it is the plan of the superintendent to employ a school dentist in the near future. Los Angeles, under the direction of George L. Leslie, has one of the best equipped departments of health supervision in the entire country. Mr. Leslie himself is not a physician but five well-trained half-time physicians and specialists are on his staff. His laboratory equipment is unusually complete.

The bill which met defeat in the legislature of 1911,—a bill proposed and elaborated by Mr. George L. Leslie, the author of the law of 1909—is a still more radical document. The text of the bill contains about 3000 words and reads like the Utopian dream of an enthusiast, but its provisions are thoroughly sound and practicable to the last degree, once the people awake to the tremendous import of educational hygiene. Alas, however, even in California "the public" is liable to show itself inert, ignorant or prejudiced on questions relating to its deepest welfare. It was so in this case. The wide publicity and misrepresentation given the bill by the newspapers of the state during the weeks following its introduction, aroused such a wave of public disapproval that the measure was killed in the assembly committee to which it had been referred. The opposition was voiced by thousands of anxious letters and telegrams from all parts of the state.

The bill embodied in *mandatory* form all the main points of the permissive law of 1909, besides the following provisions: *First,* the mandatory extension of health and development supervision to *all* the public schools of the state, under the direction of either the governing bodies of school districts or the county superintendent of schools, and further to the various state educational institutions including those for juvenile delinquents, the blind, deaf and feeble-minded. The department of health and development in the city was to be administrative in function and was designated as constituting a special field of the city superintendency. In like manner the department maintained by the county was to be administrative and constitute a special field of the county superintendency. The departments maintained by the state institutions for the blind, deaf and feeble-minded, delinquent, etc., were to carry on investigation and research in the special fields which the essential features of their work represent.

Secondly, the state normal schools were directed to organize their courses for the adequate training of teachers in educational hygiene while the state university was required in addition to give the necessary training for the development of experts.

Thirdly, it was provided that each "health and development staff" should constitute in effect a bureau for the investigation of such problems, as the causes of morbidity among pupils and teachers, physical and mental retardation, crime and degeneracy, the hygiene of activity and experimental educational psychology.

Fourthly, the bill defined somewhat more explicitly than the law of 1909, the administrative and advisory powers of the health and development staff in relation to other school officials, providing for the power to establish special classes with skilled instruction, and the power to give partial or entire excuse from school attendance.

Fifthly, it was to be the duty of the staff to instruct the teachers in methods of carrying out the provisions of the act and to organize all the courses of instruction in hygiene for the pupils.

Sixthly, and by far the most significant of all, a provision for the creation of a *State Bureau of Health and Development,* whose function was to be the organization and supervision of the state work and the prosecution of state-wide investigations of the problems of state hygiene, physical, mental and moral. The public schools of the state were to serve as a laboratory for the study of child hygiene and experimental pedagogy. The State Bureau was to consist of a State Director at a salary of $4000 per year, and associate directors at $3000 per year, to be appointed as the extension and scope of the work should necessitate. This section carried an appropriation of $30,000 to defray the expenses of the Bureau for two years.

It would appear that all sane people with the welfare of the new generation at heart ought to have welcomed such a measure. Unfortunately, on matters pertaining to health and hygiene, masses of the people are not sane. They are still in the patent-medicine stage of superstition. The more conservative (backward) sections of the state raised a storm of protest; the chief arguments being the outworn charges of "medical tyranny", "paternalism" and "expense". Christian Scientists, of whom there are very many in California, strenuously opposed it, as did also the so-called "League for Medical Freedom." The latter, as far as the writer can learn, is a vigorous organization of "sectarian" physicians, whose main purpose seems to be to oppose all social restraints on medical practice and to preserve the divine right of any kind of practitioner to prey upon the gullibility of the people. Many good and sensible persons, who believed in the principles of the bill, opposed it because of its mandatory feature, nor did it receive by any means unanimous endorsement from the first-class physicians and educators of the state, though certainly a large majority favored it.

The lessons taught by California's recent experience seem to be as follows: *First,* it is difficult and dangerous for legislation to attempt to anticipate public opinion. *Secondly,* a proposal as sweeping and reformative in nature as this one needs to be presented to the legislature and to the people of the state with as much authoritative backing and moral support as can possibly be concentrated upon it, including especially the active support of state and local associations of teachers and of physicians. The constructive reformer must work through organizations if he would succeed. However ideal a measure of this kind may be intrinsically, if active support of it is confined to a small group of persons, it is certain to be dubbed somebody's hobby.

This is so true that the writer believes the cause of child hygiene in the schools could be given new impetus if the United States Department of Education, the National Educational Association, the American Medical Association and the Russell Sage Foundation Department of Child Hygiene were to formulate carefully, after mature joint consideration of the problems involved, a system of health supervision for the public schools, or rather several alternative systems to suit the special needs of local conditions. Not immediately perhaps, but certainly after a time, these formulations would be considered standard requirements in this phase of education. Certain committee reports of the National Educational Association, possessing far less general validity and fundamental soundness than would characterize the sort of formulation I am advocating, have had notable influence in the educational practice of the country, an influence which even bids fair to outlast in some cases its period of usefulness. Such a formulation could not be made off-hand, but only after an extended study of the entire field by a group of nationally recognized experts. Two or three years might be required for its completion, but in the writer's opinion the outcome would justify all it costs.

The point of view helping to mold the work in California is especially significant. Some of the leaders in the state appreciate that medical inspection as such and the correction of existent physical defects should not be the main purpose of educational hygiene. The schools are causing defects faster than the doctors can cure them. The medical equipment of the ideal educational hygienist is one of the least of his assets. He must be schooled in preventive measures (not merely preventive medicine, though this is as important as it is rare) including genetic physiology, psycho-prophylaxis, clinical child psychology, laboratory research in school hygiene, and practical experimental pedagogy. We do not have any considerable body of men liberally trained for this important field. Medical schools are finding it difficult enough to keep above the dead line of scientific respectability.* We will never have experts of this type in sufficient number until the University Medical Schools, the Departments of Education, and the Departments of Hygiene unite in an extensive scheme of co-operation. There is nothing chimerical about such a plan. As Flexner shows, half or two-thirds of the medical schools have no excuse for existence, even apart from the question of their scientific equipment. There are entirely too many of them. Some of the best of those with small constituency and patronage, by uniting with other departments in the training of educational hygienists, could contribute more to the cause of national vitality than the largest and best equipped medical schools in the country. At any rate a number of farsighted individuals in California realize the pressing need of widespread and thorough researches in the various lines of child hygiene, and are ready to encourage all efforts looking toward the transformation of mere medical inspection into a broadly conceived educational hygiene.

---

*See the remarkable exposure of the status of medical education in the United States and Canada by Abraham Flexner, Bull. No. 4, The Carnegie Foundation.

AN EXPERIMENTAL-CRITICAL STUDY OF THE PROBLEM OF GRADING AND PROMOTION.

By W. Franklin Jones, Ph.D.,
Head of Dept. of Psychology and Pedagogy, Maryland State Normal School, Baltimore, Md.

Part I.—The Formal Aspect of the Problem.

Introduction.

The old ungraded school, whatever else may be said about it, had one splendid feature that the graded school has never attained; namely, its instruction was individualistic. On the other hand, the graded school has come to us as an administrative necessity; its economic aspect is unmistakable, and it has made possible the education of the masses. Once with us, we were quick to discern that the graded school was a mighty, social institution. We have seen that the members of its epitomized society render valuable service to others at the very time they are working for themselves; that its recitation is a veritable mental clearing house in which values are exchanged, each sees through the eyes of others, and the individual is taught by forty teachers instead of by one. The principle of highest value in the graded school is thus held to be the social principle; and this, whatever else may come to the school, we are not now willing to sacrifice. But if, while conserving the social, we can in some way bring back the valuable individualistic principle of the old, ungraded school, then we shall have realized, perhaps, the ideal on that formal administrative side which we call grading the school.

Within this problem of grading, we have to recognize a sub-problem. The school grade is not static; but the moment instructions begins, this feebly cohering mass begins to disintegrate, one student forging ahead and another lagging behind. This sub-problem which we have to meet is the problem of re-adjustment; that is, promotion, positive and negative.

Students of educational administration have been at work with this problem of grading and promotion; but unfortunately in this, as in other fields of education, we have been offered an array of opinions, rather than facts. We have had but few investigations that have given us facts, and these it seems have been of the extensive rather than of the intensive type.

It is a significant fact that investigators who have dealt with the different aspects of the problem of grading and promotion have apparently never failed to find that the more deeply one enters into the study of this problem, the more one is aware of the needs of individual and intensive studies. Thus Thorndike[1] notes that "the school histories of individual pupils are the proper data" for measuring the unequal lengths of the different grades; and he points out several "inadequacies" in his own extensive study. Ayres[2] notes that "grade distribution is the result of such diverse elements, that without the most careful analysis, conclusions as to any of these elements are liable to go astray."

The fact is, we need many investigations of each type before we can hope for a definite solution of the serious problem of grading and promotion. We shall have to have a multitude of facts that call for further study. With no thought therefore of being able to settle the matter, it is the aim in the present study to approach the subject of grading and promotion from the intensive standpoint, with the hope of being able to throw some light upon the problem.

STUDY No. 1.

The immediate aim of this study may be stated in the form of three questions:

1. What portion of the failures to carry regular school work under the lockstep[3] system is due to incapacity?
2. What portion of the elimination from school under this system is due to incapacity?
3. What light does this study throw upon the problem of grading and promotion?

Material.

One of the public schools under my supervision in Illinois presented what seemed to be a favorable type for this study. The situation was not too complex. There were eight grades in the building, averaging a little less than forty students per grade,[4] the largest enrolment in any grade being forty-six, and the lowest, thirty-two. Each grade was carried in two sections, working rather close together (lockstep). The eight teachers were well acquainted with their work, no one of them having served less than three years at her post. My own acquaintance with nearly every family represented in the school, was not my least encouragement. Finally, every child of school age in the district was in attendance; for this city, not unlike what Cornman[5] says of Boston, could

---

[1] THE PSYCHOLOGICAL CLINIC, Vol. III, page 232.
[2] THE PSYCHOLOGICAL CLINIC, Vol. II, page 133.
[3] Proceedings of the N. E. A., 1903, pp. 408-412.
[4] *Cf.* THE PSYCHOLOGICAL CLINIC, Vol. III, pp. 206-212.
[5] THE PSYCHOLOGICAL CLINIC, Vol. I, p. 254.

"boast" that it had "a seat for every child able to attend," and the school law enforced attendance.

Method.

In the choice of method, I met two apparently opposing demands:

1. It was evident that in assuming to pass upon a student's capacity to do the required work under given conditions, I must have something more than "examinations." I must come into close touch with him, see him work, converse with him, pry into his mind and into his methods of study; in short, I must make an intensive study of the student.

2. I could not make an adequately intensive study of all the students in this school, yet I must have an adequate measure of class abilities under the existing conditions.

The plan adopted was as follows:

The investigation covered a period of three years. As soon as work was fairly under way in the fall, the classes were tested for class average in each subject. Work was assigned at the beginning of test periods and the class closely supervised to see that all "tried". One test of from fifteen to thirty minutes was given in each of the major subjects each day. The total number of class tests ranged from five to twenty per subject in each grade. The object of these class tests was twofold:

1. To find the average ability of the class in each subject, working under the usual conditions.

2. To locate doubtful students.

As soon as it appeared that a student could not do seventy-five per cent as much work in a given time as the average of his class, he was made the subject of special study. All tests were on current school work. In the private tests, the student was first examined to see if his "back work" was sufficiently sound to warrant his classification. If so, he was then tested on the work the class was tested on, but which he had either failed in or had not reached in the class test. The object of the private tests, to repeat in part, was to determine:

1. *Classification.*—Whether or not the student was in the best place the school could offer him.

2. Ability to maintain rate of work shown in class tests.

3. Validity of often meager showing made in class tests.

4. *Personal characteristics at work.*—Methods of attacking work, grasp of subject, industry, persistence, conservation of time,

etc. Similar though less searching tests were given during the year, as new subjects (*i. e.* division, fractions, etc.) were reached.

It must be remembered that the object was to test the student's ability at the time to do the work the class was regularly engaged in, whatever that work was, under the usual conditions of study, teaching, and so on. Since it is impracticable to do more than indicate the nature of these numerous tests, I give herewith one test in each of the school subjects (major). These tests are picked at random, except as noted later.

Test in Reading—First Grade.

(Class of 18)

Material Used.—Story of the fox, pages 108-109, in the first book of the "Stepping Stones to Literature" series, published by Silver Burdett & Co. No one in the class had ever seen the lesson before.

Instructions to Class.—"Study it as you usually do your reading lesson. As soon as you know what it says, close the book quietly and fold your hands." (Time was recorded for each student. Each was then questioned in private for the thought, and remanded if necessary, counting additional time.)

Test in Arithmetic—Fourth Grade.

(Class of 21)

Material Used.—Problems on page 111 of Book I, Werner Arithmetic, published by the American Book Company.

Instructions to Class.—"Take the problems in order, and work as many of them as you can before time is called. Only those which you get right will be counted." (These students had been taught during a test to leave problems which they could not work out without losing considerable time.)

(In handling problems of a series growing gradually more difficult, the plan commonly followed was that of having the students first work through the even-numbered problems, then through the odd numbered.) The results of this test are as follows:

1	28	3	17
1	24	3	16
1	21	2	14
2	20	2	11
3	19	1	2
2	18		

Class average, 17 problems.

(This test was not picked at random, but selected for reasons shown later.)

Test in Grammar—Seventh Grade.

(15 students)

Material.—Fifteen typewritten slips of paper containing ten sentences each.

Instructions to Class.—"Underscore once the logical subject, and twice the logical predicate, in each of the ten sentences. Raise the hand when finished."

The ten sentences were as follows:

1. The old man was often in want of the necessaries of life.
2. The book of which you spoke is not to be found in the library.
3. He did not understand the assignment.
4. The train which was expected at ten o'clock did not arrive till eleven.
5. How many men were killed in the battle?
6. Those of you who can answer my question, raise the hand.
7. "Thou shalt not bear false witness against thy neighbor."
8. I shall probably reach home before dark.
9. Several men died of fever in the ship.
10. Are you not trying to do your work well?

(Time recorded for each student. Rating combined accuracy and time.)

Test in Geography—Eighth Grade.

(15 students)

Material.—Physical and relief maps of Africa.

Instructions to Class.—Recalling the prevailing winds, see how many facts you can discover that go to show why the Nile, the Sahara, and the Congo are what they are and where they are.

(This class had done similar work with other continents. Time was called in twenty minutes. No one had finished.)

Test in History—Fifth Grade.

(22 students)

Material.—The teacher narrated that portion of the story of Joliet and Marquette which may be found in the two paragraphs extending from the bottom of page 61 to the middle of page 63, in McMurry's "Pioneer History Stories of the Mississippi Valley," published by Macmillan Company.

Questions.—The students were then asked the questions given below. The answer to one question was written before the next question was asked. No other time limit.

1. What time of the year did Joliet and Marquette reach the Mississippi?
2. Did they go up or down the Mississippi?
3. What did they see that reminded them of the Indian story?
4. What did they see on the prairies?
5. What did they do to avoid dangers of night attacks of the savages?
6. How did they happen to find the Indian village?
7. How did they attract the attention of the Indians of the village?
8. What did the chief Indians first do in receiving the Frenchmen?
9. What led Joliet and Marquette to think the Indians must be friendly?
10. What name did the Indians claim for their tribe?
11. In what strange way did the Chief honor the Frenchmen?
12. How did the Frenchmen learn of the "Great Chief?"
13. In what strange way did the "Great Chief" receive them?
14. How were the Frenchmen able to talk with the Indians?
15. What did they tell the "Great Chief?"
16. What reply did the "Great Chief" make?

These questions were framed with the design of calling out short, definite answers that would be either right or wrong, with as little mixing of right and wrong as possible.

The Table of Statistics.

The marks recorded in the table that follows are in terms of the class average. To illustrate, the last student in the arithmetic test recorded above, worked two problems. This is about 12 per cent of the seventeen problems which the class averaged. This student's record for this test is thus 88 per cent below the class average, that is—88.

Any student who in the class tests had demonstrated his ability to do at least 75 per cent as much acceptable work as the class averaged, was counted competent to carry that subject and he was not held for private tests. Students failing to do this 75 per cent were held for private work. In the final rating for capacity to carry regular work, the amount of additional (outside) time required by a given student to do the work shown by the class average, was calculated. If this "extra time" exceeded one-half of the actual school study periods for these major studies, then the student was regarded incompetent to do the regular work. (Divested of accessories, these actual study periods in school footed up two and a half hours, approximately, in the seventh and eighth grades, and decreased through the grades to less than an hour in the lowest primary grade. Attention is called to the fact that the "outside" study thus meant over an hour in the upper grades; this, too, in solid study at the probably unusual rate shown in the class tests.)

The time absent previous to elimination is recorded in each case where unavoidable absence was the cause of the failure to carry work and meet promotion with the class. Students found competent, but unwilling to do the work, are marked "indolent."

In dealing with the difficult question of actual cause of elimination, my own wide acquaintance with the patrons seemed to be my license. I had no method, unless it was that of pursuing the case. When I reached a point where the actual cause seemed no longer a matter of question, I ceased pursuit. In order to illustrate my procedure, I will deal with a few typical cases in the higher grades where the actual cause is likely to be more carefully concealed.

Number 89 in the table was a fourteen-year-old girl. The reason she gave her teacher for leaving school was, "Too much work at home." This case was first attacked through the girl's intimate associates, and it was found that she had given them the same reason. The girl's father was next approached. He indignantly denied that the girl was worked enough at home to interfere with her school work, and he stated that the girl had pleaded for permission to leave school because she could not keep up with her class. Fearing that the father might be in error as to a reasonable quantity of work, or even that he might be attempting to deceive, one of the high school teachers who lived near this family was asked to call at the home and cautiously investigate. This was done, and the teacher reported that there was no overwork. I then requested the girl to call at my office, and when she came she admitted with shame that she had not given the teacher the real reason. "I didn't want my teacher and everybody to know I was dumb," was her confession. Since our records justified this reason, I ceased pursuit.

Number 97 was a sixteen-year-old girl. Her father came to withdraw her from attendance because "she is too lazy for any use in school." This man was an alderman, high spirited, and I feared he was concealing what he really knew. The girl had come all the way up through our grades, and the teachers were called on for opinions. There was not one of the teachers who thought the girl actually lazy, but the consensus of opinion was that she was only "a fair worker and very dull in arithmetic." The girl was then called and asked for a reason. She hesitatingly said, "My father says I am too lazy." "But what do you say?" was asked. In sobs and in fragments came the answer, "I have tried hard to do my work, but you know I can't." I felt that I did know this, and I gave my assent.

Number 90 was a thirteen-year-old boy, native born but of foreign parentage. He had been a good worker in school until the last year. He left in January, at the end of the sixteenth week of school. He gave "work" as his reason for leaving. The coincident facts were noted that he left school just as soon as the sixteen weeks school law at that time permitted, and that he would be fourteen before the beginning of another school year. Our records showed that this was the third instance of the kind in this family. The boy really went to work in his brother's harness shop, and remained at work. The brother stated that the family felt that the boy knew enough to enable him to "make his way." It was thus not only evident that the boy actually left school to go to work, but also that this knowledge that he was to leave was the cause of his failure to carry his school work. (This case coincides with Falkner's[6] findings that some students "anticipate the fourteenth birthday.")

Under the heading, "Reasons for failure," in the table, are given reasons other than that of incapacity. Records of students whose failures were due to absence, are not given, since they would only complicate the records needed. The list contains the names of the entire number of students who failed to carry school work during one or more of the three years covered by the investigation.

Absence that could well have been avoided is marked by the abbreviation "Av." The number after the word "Absence" indicates the approximate number of weeks. Ages in all cases are computed up to the first of January of the school year in which the failure occurred.

(Since the number of eliminations from death would not here alter conclusions, they are not thrown out. Strange though it may seem, the school was blamed (by the girl's father) for the case of child-marriage; hence the case is allowed to stand.)

---

[6] THE PSYCHOLOGICAL CLINIC, Vol. II, page 58.

All told, forty-nine out of the one hundred and two failures were due to incapacity; and twenty-seven out of fifty-eight alleged reasons for leaving school agreed with the actual facts.

Significant Facts Revealed by This Table of Results.

1. About one-half of the failures to carry work in this school under the lockstep system were due to incapacity to do the required work. (49 out of 102.)
2. About one-third of all eliminations were due to incapacity to do the work under existing conditions. (19 out of 58.)
3. Over one-half of all eliminations came from students who had failed to carry their work. (34 out of 58).
4. One out of three failing students left school. (34 out of 102.)
5. One out of thirty-three non-failing students left school. (24 out of 837.)
6. Alleged reasons for leaving school were about as often false as true. (27 out of 58.)

Comparison of Results with Those of Other Investigations.

We may now compare the results of this study with those of some of the recent investigations of the extensive types (I know of no similar investigations of the intensive type; none, at least, have been published).

Ayres[7] found that on the average, death eliminates each year about three-tenths of one per cent of the students enrolled (27 out of 1000 in eight years). My tables show four-tenths of one per cent (4 out of an average enrolment of 313 for three years). The difference is slight, but the enrolment upon which my figures are based is too small to offer anything more than a mere comparison in this respect. Ayres found that "for each 1000 children in the first grade, no more than 871" reach the eighth grade. My study shows 803 out of 1000 (122 enrolled in the first grade and 98 in the eighth). Neither my own figures nor those of Ayres are quite reliable here, since they are not based on the history of individual cases. Ayres found that one-fifth of the students enrolled fail to be promoted, Thorndike[8] found one-seventh, and my figures show one-ninth (102 out of 939). As to the number of students leaving school, the results of Ayres and of Thorndike are hardly comparable with my own, since the recent compulsory school attendance law of Illinois holds the child in school until he is sixteen years

---

[7] THE PSYCHOLOGICAL CLINIC, Vol. II, pp. 121-133.

[8] THE PSYCHOLOGICAL CLINIC, Vol. III, p. 8.

Girls.	Boys.	Age. Years. Months.	Reading or English.	Arithmetic.	Language or Grammar.			Reasons for failure other than incapacity. (Omissions and "Defective" mean incompetent.)	Eliminated.	Alleged reason for leaving.	Actual reason for leaving.
		1st grade									
1	..	6—7	.....	.....	.....	...	...	Absence...... 4			
2	..	8—6	-28	-40	-38						
3	..	6—6	.....	.....	.....	...	...	Absence......12			
4	..	6—7	- 5	14	- 7	...	...	Indolence.			
5	..	6—5	-60	.....	-41						
6	..	6—8	.....	.....	.....	...	...	Absence Av.			
7	..	7—6	-35	-15	4	(Nervous)		Absence...... 3	Withdrawn for time.		
	8	7—1	-78	-12	-38						
	9	6—5	.....	.....	.....	...	...	Absence Av.			
	10	7—2	-50	-21	-34						
	11	7—1	-37	-26	-43						
	12	13—6	-34	-23	-51	...	...	....	Elim.....	Work......	Incap.
	13	6—8	.....	.....	.....	...	...	Absence Av.			
	14	6—5	-37	-44	-23						
		2nd grade									
15	..	9—5	-51	-20	-38						
16	..	7—7	.....	.....	.....	...	...	Absence...... 8			
17	..	7—9	.....	.....	.....	...	...	Absence......11			
18	..	8—0	-35	-21	-54	...	...				
19	..	8—1	.....	.....	.....	...	...	Absence Av.			
	20	7—5	3	12	- 5	...	...	Mind Wanderer.			
	21	7—7	.....	.....	.....	...	...	Absence...... 7			
	22	14—1	-67	-16	-38	...	...	....	Elim.....	Too old....	Incap.
	23	7—6	-43	-18	-58						
	24	7—5	7	- 3	-12	...	...	Mind Wanderer.			
		3rd grade									
25	..	8—5	-14	-78	-16	-26					
26	..	9—1	.....	.....	.....	...	...	Absence Av.			
27	..	8—9	-43	-12	-57	-30					
28	..	8—6	.....	.....	.....	...	...	Absence...... 5			
29	..	8—8	.....	.....	.....	...	...	Absence...... 9			
	30	8—4	- 2	-15	- 9	- 6	...	Indolence.			
	31	8—7	-37	-40	-39	-35	...	Defective.			
	32	9—1	.....	.....	.....	...	...	Absence...... 4			
	33	11—1	.....	.....	.....	...	...	Absence Av......	Elim.....	Moved away	
	34	9—4	-18	-45	-29	-47					
	35	10—2	-64	-24	-36	-14	...	Defective........	Elim.....	Eyes bad...	Incap.
		4th grade									
	36	11—6	10	-18	4	-15	-11	Indolence........	Elim.....	Won't study, then must work.	
	37	9—5	.....	.....	.....	...	...	Absence...... 5			
	38	9—4	.....	.....	.....	...	...	Absence Av.			
	39	10—1	.....	.....	.....	...	...	Absence Av.			
	40	10—2	-32	-45	-19	-44	-32				
	41	13—4	.....	.....	.....	...	...	Absence Av......	Elim.....	Knows enough...	Inappre.
	42	13—1	-28	-53	-22	-39	-30	....	Elim.....	Work......	Incap.
43	..	9—5	-30	-37	-25	-30	-48				
44	..	9—5	80	-88*	78	56	69	Absence......14	Withdrawn for time.		
45	..	10—1	-45	-32	-22	...	...	Defective.			
46	..	9—6	.....	.....	.....	...	...	Absence...... 6			
47	..	9—8	-23	-55	-50	-31	-12				
	48	9—5	.....	.....	.....	...	...	Absence...... 9			
		5th grade									
	49	12—7	-24	-32	-50	-12	-55	....	Elim.....	Try St. Albans.....	Incap.
	50	10—5	.....	.....	.....	...	...	Absence...... 7			
	51	10—6	-20	-28	-19	- 3	-30	Indolence........	Death.		
	52	12—8	-38	-35	-32	-49	-18				
	53	11—1	-15	.....	-20	-41	9	Indolence.			
	54	10—6	-18	-50	-41	-34	-32				
	55	13—4	-29	-38	-22	-40	-41	....	Elim.....	Can't get along with teacher.	
	56	10—4	.....	.....	.....	...	...	Absence...... 6			
57	..	10—9	3	-14	-12	-43	8	Indolence.			
58	..	13—8	-26	-26	-31	-47	-40	....	Elim.....	Needed at home....	Incap.
59	..	10—9	.....	.....	.....	...	...	Absence...... 7			
60	..	11—1	- 8	-55	-13	-55	-42				
61	..	10—6	.....	.....	.....	...	...	Absence...... 8			
62	..	10—8	4	-24	-10	-32	-19	Indolence.			
63	..	12—7	-51	-29	-34	-14	-42	....	Elim.....	Moved away	Incap.

* Record of single test.

Girls.	Boys.	Age. Years. Months.	Reading or English.	Arithmetic.	Language or Grammar.			Reasons for failure other than incapacity (Omissions and "Defective" means incompetent.)	Eliminated.	Alleged reason for leaving.	Actual reason for leaving.
		6th grade									
	64	14—6	-32	-20	-38	-40	-39		Elim	Better go to work	Incap.
	65	11—7	...	...	...	...	...	Absence 7			
	66	13—1	-39	-57	-22	-33	-21		Elim	Work	Work.
	67	11—6	6	-21	-17	-13	-20	Indolence.			
	68	13—7	...	...	...	...	...	Absence Av	Elim	Work	Work.
	69	13—5	...	...	...	...	...	Absence Av	Elim	Work	Work.
	70	14—1	-30	-29	-45	-41	-29		Elim	Work	Incap.
71	..	11—6	...	St. Vitus		...	...	Absence 4			
72	..	13—1	-17	-43	-23	-41	-52		Elim	Work	Incap.
73	..	11—5	...	...	...	...	...	Absence Av.			
74	..	11—8	-20	-41	-34	-32	-46				
75	..	14—1	-24	-53	-30	-38	-24		Elim	Can't keep up	Incap.
		7th grade									
	76	14—0	-12	38	- 5	-23	-14	Indolence	Elim	Won't work in school, try something else.	
	77	12—6	-11	-54	-18	-36	-43				
	78	13—2	- 8	4	-15	...	-24	Indolence	Elim	Work	Work.
	79	12—8	-40	-54	-48	-28					
	80	14—3	-41	1	-55	-47	-30		Elim	Work	Incap.
	81	12—8	-24	-10	-16	13	-23	Indolence.			
	82	13—3	-32	-69	-46	- 7	-16		Elim	Too lazy	Incap.
83	..	12—7	...	...	...	...	...	Absence 17			
84	..	12—9	-33	-51	-29	-32	-24		Expelled.		
85	..	13—2	...	...	...	...	...	Absence 5	Elim	Work	Work.
86	..	14—2	...	...	...	...	...	Absence Av	Elim	Married.	
87	..	12—6	...	...	...	...	...	Absence 8			
88	..	12	-16	-72	-13	-30	-36				
89	..	14	-20	-35	-36	-38	-40		Elim	Too much work at home	Incap.
		8th grade									
	90	13—6	11	-10	- 6	12	37	Indolence	Elim	Work	Work.
	91	13—8	15	-29	-12	-31	-16	Indolence.			
	92	15—1	-20	-43	-57	-24	-35		Elim	Too slow	Incap.
	93	13—5	-27	-37	-31	-43	-32				
	94	14—3	-31	-26	-37	-43	-32		Elim	Work	Incap.
	95	13—6	-40	-14	-57	-26	-32		Elim	Work	Work.
	96	13—5	...	...	...	...	...	Absence 5			
97	..	16—1	2	-83	-21	-37	-35		Elim	Too lazy	Incap.
98	..	15	-34	-39	-35	-33	-40		Elim	Can't keep up	Incap.
99	..	13—5	-41	-28	-31	-38	-43				
100	..	14—9	-23	-56	-28	-20	-44		Elim	Too slow	Incap.
101	..	13—8	...	...	...	...	...	Absence Av.			
102	..	13—8	...	...	...	...	...	Absence 4	Moved away without warning		Unknown.

CONDENSED STATISTICS FROM THE FOREGOING TABLE.

(WITH ADDITIONAL FACTS)

Grade.	Enrolment. First Year.	Enrolment. Second Year.	Enrolment. Third Year.	Total.	Eliminated.	Per cent. eliminated.
1	36	42	44	122	2	1.6
2	37	38	40	115	2	1.7
3	39	42	38	119	3	2.5
4	42	39	46	127	5	4.0
5	41	45	40	126	9	7.1
6	42	43	45	130	10	7.7
7	33	32	37	102	13	12.8
8	32	34	32	98	14	14.3
	302	315	322	939	58	6.2

Year.	Enrolled.	Failures.	Carried and eliminated.	Failed and eliminated.	Total eliminated.	Eliminated for "Incap."
First	302	30	7	10	17	5
Second	315	35	7	12	19	6
Third	322	37	10	12	22	8
	939	102	24	34	58	19

Number of deaths, 4. Marriages, 1.

of age unless released after fourteen on a "school and age certificate." (This stringent law went into effect during the third year of my Illinois research, and the anticipation of it went into effect at least a year earlier.) Ayres found that "irregular attendance is accompanied by low percentage of promotions." My own study fully corroborates this finding, and I also found that failure of promotion is almost certain to be followed by irregular attendance. My results also agree with Ayres'[9] third conclusion; namely, that "Low percentage of promotion is a potent factor in bringing about retardation;" but my study goes farther and reveals that under the lockstep (still the prevailing scheme of classification) something like one-half of all failures to carry grade may be attributed to inability to do the required work under ordinary conditions. The fourth conclusion reached by Ayres, namely, that "retardation results in elimination," is also found true in my study; and my figures reveal that more than half of all eliminations under the system studied were of students who failed to carry their work.

My table of statistics shows agreement with Thorndike's contention that[10] "there is no support whatever in fact for the doctrine that the retarding force is greater in the early than in the later grades (grade one being left out of the question)." The striking fact here revealed is that the number of failures is so non-varying throughout the eight grades. Failure here meant retardation; and the per cent of failures throughout the eight grades in order is as follows: 12 per cent, 9 per cent, 10 per cent, 10 per cent, 12 per cent, 9 per cent, 14 per cent, 13 per cent. The highest percentages of retardation (the number of over age students who "carried" their work did not alter the relative per cents given) are thus found in the seventh, eighth, first and fifth grades. I believe that as compulsory attendance laws become more rigid, we shall find no reason to make Thorndike's exception of the first grade, and this too in spite of the fact that[11] "a very important cause of retardation in the primary grades is inadequate and irregular attendance," as Johnson found in his Pennsylvania studies.

My figures agree with Thorndike's[12] findings that the highest elimination occurs in the grammar grades; but the "greatest increase" in elimination here occurs in the seventh year, thus agreeing with Cornman,[13] and not in the sixth or the last grammar grade, as Thorndike found. It is a significant fact that investigations

[9] U. S. Bur. of Ed. Bul. No. 4, 1907.
[10] THE PSYCHOLOGICAL CLINIC, Vol. III, p. 256.
[11] THE PSYCHOLOGICAL CLINIC, Vol. III, pp. 89-95.
[12] U. S. Bur. of Ed. Bul. No. 4, 1907.
[13] THE PSYCHOLOGICAL CLINIC, Vol. I, p. 245.

agree in showing eliminations clustering chiefly around the seventh year (sixth, seventh and eighth). It is safe to say that the explanation is to be found in retardation plus the fourteenth year school law limit.

The causes of eliminations are not clear in Thorndike's study; in fact causes are difficult to find in studies of the extensive type. School records are far from reliable here, and we need many intensive studies upon which to base judgment. Thorndike is evidently correct in his belief that poverty, lack of interest in school work, and intellectual inability are important causes. My own study shows that alleged reasons, such as are found in school records, are as likely to be false as true (27 out of 58 alleged reasons agreed with the actual); that one out of three failing students left school, and that over one-half of all eliminations came from failures to carry school work (34 out of 58). I found also that even before the stringent new compulsory school attendance law went into effect in Illinois, eliminations as well as attempted eliminations came almost entirely from students near the fourteenth year age limit. (The old law in Illinois required but sixteen weeks attendance out of the year; and this was not hard to escape, if we judge from experience.) This agrees with Falkner's conclusion drawn from a review of Cornman's study, namely, that "dropping out of school depends more upon age than upon the degree of advancement in school studies."[14]

Criticism of Systems of Grading and Promotion.

In the light of the foregoing experimental study, we may now make a critical study of the various systems of grading and promotion which have gained some prominence in educational literature.

First comes the lockstep, at the very mention of which the school principal seems as ready to fly to arms as the savage does when his fetich is picked to pieces. But, however we may decry this time-honored system, and however shrewdly we may study to find a new name for our minor variations of this primal scheme of grading, the fact remains that the lockstep is the prevailing system throughout the states.

The Lockstep Characterized.

The lockstep system works the students of a given grade along together. If the grade is so large that it is deemed advisable to divide it into any number of classes, the different sections still do about the same work in about the same time. The characteristic feature of the lockstep is that the students of a given grade move forward at about the same rate, hence the term "lockstep."

---

[14] THE PSYCHOLOGICAL CLINIC, Vol. II, p. 58.

Criticism of the Lockstep.

Human beings differ enormously in mental capabilities. What, then, shall we say of the lockstep, which proceeds squarely on the assumption that students may do about the same quantity of work in about the same time? It harnesses together forty students, and with little respect for their individual differences, hobbles their legs of progress for eight years. Briefly told, the individual is hardly an individual under this system, but rather one-fortieth of a mass. Under the lockstep system—

I. The individual is lost in the mass.

The most serious aim in any system of grading should be, to group together students who need similar treatment, whatever that treatment may be. One asks, "How many children should be given to a teacher?" The answer in interrogative form is, "How nearly alike from the pedagogic standpoint are the members of the group or groups which she is to handle?" This is the first and foremost factor in settling the question of number.[15] Forty students of like ability are more easily handled than twenty students of unlike ability; and the chances of carrying the work are easily in favor of a student in the better classified group.

Attention is here called to an interesting fact revealed by the statistics of the foregoing study. If but three-fourths as much work had been required of the forty-nine students who failed because of incapacity, forty-two (85.7 per cent) of them would have apparently been able to carry their work. I do not wish to imply here that they would have done so, but only that in so far as their records show, they could have been expected to carry their work. (This statement was fully justified by the number of these students who remained in this school after the grades were redivided into two groups each, on the basis of ability.) Coming directly to the point, a flexible system which, without giving more work to the teachers, would have divided each of the eight grades in this school into two groups, on the basis of ability, could have saved most of these failures, by working the less able students at a rate suited to their capacity. This fact indicates a second charge against the lockstep, namely,—

---

[15] See Cornman, "Size of Classes and School Progress," THE PSYCHOLOGICAL CLINIC, Vol. III, pp. 206-212.

II. It does not classify students so that the teaching may be readily modified to fit ability.

Again, the forty-nine students recorded as "incompetent," gave the teachers in this school more concern than all the other students (939 students in all enrolled in three years) combined. The dull students are the teacher's nightmare under this system, and she is bound to spend an over-proportionate amount of time trying to keep them from falling behind. Now, education should not consist mainly in coddling the weak, but rather in freeing the strong; and any system of classification which requires of the students more work than many of them can do under existing conditions, is sure to bind the teacher's time and attention upon the weak students. Hence arises a third charge against the lockstep system,—

III. It puts the emphasis upon the weak, rather than upon the strong.

There is another fact related to, yet quite distinct from, the second charge mentioned, which quite regularly appeared in the tests given in this study. It may be noted that there were ten students (about half of the class) who made in the arithmetic test previously recorded[16] an average of about twenty-one problems. It is thus evident that the brighter half of this class might well have done more work in arithmetic than the amount required to fit the class average. As it has already been shown that the dull students are usually assigned too much work, so now we are confronted with the fact that the bright students are assigned too little work. This is a veritable companion of the lockstep system; hence a fourth charge against it:

IV. It does not work the bright students up to their mental capacity.

Returning now to the arithmetic test, the reader may wonder why promotion would not have been a reasonable suggestion for improving conditions in this class. The fact is, the boy who made the highest rank in this test was a strong all-round student. He was a good candidate for promotion, but the "jump of a year's work" was a bugbear to him and to his parents. Promotion over a large part of a year's work really does mean a serious struggle, with a splendid chance of losing a portion of the intervening work. Hence a fifth charge against the lockstep,—

V. It does not make promotion feasible.

Closely interwoven with the evidence up to this point is the problem of adjusting the work to class instruction. The teacher who finds her class made up of students of widely varying abilities, is at one time tempted to adjust the work to the class average, at another time to the mode, again to the median, and still again to the duller half or to the brighter half, but never is she fully satisfied with any "adjustment" that she can make; for the reason that it is not an adjustment. Indeed, this study revealed the fact that in dealing with heterogeneous groups, the assignment of work may actually not fit a single individual; but instead, the class may be found to be divided into two groups, one on each side of the mark aimed at in making the assignment. The point to be noted here is that the lockstep class is nearly sure to present abilities represented by a broad surface of frequency, and this means poor opportunity to make well-adjusted assignments. Hence a sixth charge against the lockstep,—

---

[16] See p. 66.

VI. It does not facilitate well-adjusted assignments of work.

There is still another fact, distinct yet closely related to the preceding evidence, to which attention should be called; namely, the lockstep formally attempts to cast all students—the bright, the mediocre, and the dull—in the same mold. Now, the school is an institution whose positive duty it is to emphasize individual inequalities. [17]"For the individual, concentration and the highest development of his own peculiar faculty, is the only prudence. For the state, it is variety, not uniformity, of intellectual product, that is needful. It is for the interest of society to make the most of every useful gift or faculty which any member may fortunately possess; and it is one of the main advantages of fluent and mobile democratic society that it is more likely than any other society to secure the fruition of individual capacities". [18]"The ability to discover people's capacities, to find situations where they can be used to advantage, and then give the individual the opportunity to show his worth, is one of the secrets and necessities of all successful executive work." Measured by this yardstick, the lockstep system falls fearfully short; hence a seventh charge against it,—

VII. It fails to emphasize individual inequalities.

Referring again to the statistics, the reader may note that 23.5 per cent of the failures to carry work were due to unavoidable absence. After a legitimate absence of a few weeks, the student, weakened by sickness perhaps, returns to school, only to find his grade beyond his reach. Now the loss of a grade is bad enough, but that may not be the worst of it, for under the lockstep the student who loses his grade formally loses a year, perhaps. Sickness steals a few weeks from his schooling, but the lockstep system steals the remainder of a year. Thus arises an eighth charge against the lockstep,—

---

[17] Ex-President Eliot, of Harvard University.
[18] S. C. Parker, Miami University.

VIII. It gives inadequate opportunity to regain loss due to **absence.**

We come now to the question of what responsibility the lockstep has in the matter of failures to carry school work, and this brings up the most serious charge, probably, that has yet arisen. The statistics of my study reveal the fact that in forty-nine out of one hundred, two failures to carry grade work were due to incapacity. These students simply could not do the amount of work that their fellows were doing under the given conditions. It has already been pointed out that had the grades of this school been divided each into two sections on the basis of ability, then a small reduction in the amount of work required of the weaker sections would have made it possible for 85.7 per cent of the otherwise incapable students to carry their work. (It would also have been advisable then to increase the amount of work of the more capable sections.) We may now go one step farther and say that, whenever it is found expedient to divide a class into sections, the division should be made on the basis of ability to do work; and that there should be just as many divisions as the teaching force can judiciously permit and the conditions require. This is exactly what the lockstep does not do. Instead, it aims to keep the students together, thus if it does anything at all like giving the stronger portion of the class enough work to do, or even aims at the class average, it fosters failures among the less competent students. Hence a ninth charge against the lockstep,—

IX. It fosters failures among the less capable students.

Next comes up the fearful question of elimination from school. The foregoing statistics show that out of fifty-eight cases of elimination, covering a period of three years in the given school, nineteen (33 per cent) left school because they could not do the quantity of work necessary to maintain class standing. A very large part of this elimination might have been obviated by the introduction of a flexible system of grading. A system, such as would have divided each grade into sections, on the basis of ability, and then worked each of the sections at the rate indicated by the new class average or mode or median, would have been better for both sections, and at the same time it might have saved something like four-fifths of the forty-nine hopeless failures, and it would have saved fourteen (74 per cent) of the nineteen eliminations due to incapacity. Hence arises a tenth charge against the lockstep system,—

X. It is responsible for much elimination from school.

Special attention is now called to two students (numbers 7 and 44) in the list, who were victims of worry. They were two girls, with so generous a share of ambition and persistence that they could not leave their work partly done. The reader may note that each had one subject in which she was apparently "born short"; yet one (number 44) of these high-pitched little creatures was actually the leader of her class in all subjects except the fatal arithmetic. Though unquestionably incompetent to do the amount of work required of her class in this subject under existing conditions, it was discovered in her first private test that her habits of study in this branch were very bad. Everything on her desk had to be kept in just such a position or she became nervous. She spent much time in arranging things; and after she had worked a problem, fearing there might be an error, she went over the problem again and again. (This child's actual ability in arithmetic was, speaking approximately, something like sixty per cent of the class average; that is—40; but owing to nervous condition she was not held for further tests in arithmetic, hence definite grade in same cannot be given.) The other child was simply backward in her reading, and became nervous through worry over her difficulties. Both of these students were temporarily withdrawn from school as a result of nervous condition. Now, in justice to the despised lockstep, it should be said that no system of classification is immune to cases of this kind; yet the lockstep, above all others, is the system under which such students are not able to work. Hence arises an eleventh charge against the lockstep,—

XI. It easily works beyond a safe limit the slow but persistent student who is prone to worry.

There is still another consideration which should probably be weighed here. [19]Serious arguments are now and then put forward for cutting down the elementary course of study to six years. Then, too, we have already thrown out portions of the subject matter which we are now pleased to call "obsolete." The fact is, there is a strong feeling that in some way we must not only stem the tide of the eight-year course, which has been stuffed and "enriched" till we are all threatened with school gout, but that we must actually cut down the eight years to six or seven. The several hundred tests covered by this study clearly indicated that some students ought to complete the course of study for the eight grades in less than eight years, while others should and some will take a longer time. It is economic, as regards both time and expense, that the stronger students be given opportunities to complete work as fast as their mental growth will permit, without going beyond the point of diminishing returns. We are sadly in need of facts to show where this point is likely to be, but it is at least safe to say that it is not the same for all students. Hence a twelfth charge against the lockstep,—

---

[19] Soldan, "Shortening the Period of Elem. Schooling," *Ed. Rev.*, Vol. 25, pp. 168-181; Greenwood, "Shortening the Time in the Elem. Schools," *Ed. Rev.*, Vol. 24, pp. 384-390.

XII. It stands in the way of shortening the elementary school period for competent students.

Summary of Criticisms against the Lockstep.

By way of summary, and for convenience of reference, we have the following twelve indictments against the lockstep system:

I. It loses the individual in the mass.
II. It does not classify students so that treatment may be readily modified to fit abilities.
III. It puts the emphasis upon the weak, rather than upon the strong.
IV. It fails to work the strong students up to their reasonable limits.
V. It does not make promotion feasible.
VI. It does not facilitate well-adjusted assignments of work.
VII. It fails to emphasize individual inequalities.
VIII. It gives inadequate opportunity to regain loss due to absence.
IX. It fosters failures among the less capable students.
X. It is responsible for much elimination from school.
XI. It easily works beyond a safe limit, the slow but persistent student who is given to worry.
XII. It stands in the way of shortening the elementary school period for competent students.

Criticism of Systems Aiming to Avoid the Defects of the Lockstep.

Without exception, the numerous systems of grading and promotion have arisen through efforts to avoid the defects of the lockstep system. There are so many of these systems that it will be found expedient to classify them for treatment under eight heads:

1. The double promotion system.
2. The double track system.
3. The group system.
4. The double tillage system.
5. The review back system.
6. The concentric work system.
7. The ungraded class, or individual, system.
8. The minimum work system.

The Double Promotion System.

The double promotion system represents probably the first wide movement to heal lockstep ailments. It grew out of the feeling that the old annual promotion scheme was an elevated road system with too few stations; and it set to work to double the number. No system perhaps has given us so many variations, and for simplicity and clearness we may deal here with that typical form which admits two classes a year in the lowest primary grade and carries them along through the grades about a half year apart. Unless some further movement toward flexibility is introduced, this system may be viewed as the lockstep with the unit of work reduced to the half year. It is clearly a marked improvement over the lockstep with the full year unit of work; the most commendable feature being that promotion, either positive or negative, is much facilitated by the shorter step. The fact that this typical form is clearly lockstep, however, with each of the twelve indictments holding against it, though most of them with diminished force, has led to many complications of this system by mingling with it some ingredients of the systems yet to be described.

The Double Track System.

The system popularly known as the double track system has been in successful operation in a few schools of a few states for a number of years. Cambridge, Mass., may be taken as an eastern type of this system, and Portland, Oregon, as a western type. The difference between these two types lies mainly in the fact that in Cambridge the plan is used only in the grammar grades, while in [20]Portland it holds throughout the grades. In other respects the two types may well be considered identical. The [21]Cambridge plan is outlined in the city's "Annual Report of the School Committee" as follows:

---

[20] Portland City School Report. (Any recent year.)
[21] Cambridge, "Annual Report of the School Committee." (Any recent year.)

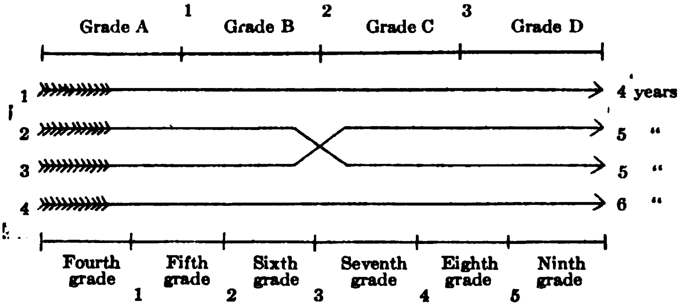
"The course of study is divided in two ways: (1) into six sections; (2) into four sections; each section covering a year's work. Pupils taking the course in six years are classified in six grades, called the fourth, fifth, sixth, seventh, eighth, and ninth grades. Those taking it in four years are classified in four grades, called grades A, B, C, and D. When pupils are promoted to the grammar schools they begin the first year's work together. After two or three months they are separated into two divisions.

"One division advances more rapidly than the other, and during the year completes one-fourth of the whole course of study. The other division completes one-sixth of the course.

"During the second year the pupils in grade B are in the same room with the sixth grade. At the beginning of the year they are five months (one-half the school year) behind those in the sixth grade. After two or three months, grade B is able to recite with the sixth grade, and at the end of the year both divisions have completed one-half the course of study—the one in two years, and the other in three years. The plan for the last half of the course is the same as that for the first half, the grades being known as the seventh, eighth and ninth in the one case, and as C and D in the other.

"There are also two ways of completing the course in five years: (1) any pupil who has completed one-half the course in two years may, at the end of that time, be transferred to the seventh grade, and finish the course in three years; (2) any pupil who has completed one-half the course in three years may, at the end of that time, be transferred to grade C, and finish the course in two years. In both cases the changes can be made without omitting or repeating any part of the course."

Diagram of the Double Track Scheme.



It is to be noted that the double track system aims to classify students on the basis of ability, and then to move the unequally competent classes forward at rates suited to the different abilities. Now, whether or not this aim is well carried out, it recognizes and attempts to proceed on the only sound basis for classification; namely, the ability to do work. The indictments laid against the lockstep grow pale before this system. The evils pointed out by six of these indictments are here reduced well-nigh to the minimum; but there is still much to be desired in the way of removing charges I, II, V, VI, VII, and VIII. There is one thing which this system does better than any other system known to educational literature,—it takes cognizance of the meeting points of classes moving through the course of study at different rates, and definitely plans to reclassify while on this common ground. Class disintegration is thus relieved at the zero point of the scale of promotion. Promotion at other times under this system is about as feasible, on the whole, as it is under the double promotion scheme.

The argument that [22]"dull students should have a few bright minds mingled in the classes with them in order to afford stimulation and example," can hardly be regarded as sound. The counterclaim that bright students under the double track scheme continually find their way into the slower classes through promotion, is equally worthless. Both of these arguments fail to recognize the most valid principle in classification; namely, the principle of homogeneity of groups. There is one vital caution that must go with the double track system, and that caution is: See that no stigma is attached to the "freight train" classes, and that the clamor for the privilege of "taking the express" is silenced by a judicious hand.

The Group System.

In the group system we again meet many variations, though all may be conveniently subsumed under the three types that follow.

The St. Louis Plan.

The St. Louis plan was introduced into the schools of St. Louis, Mo., by Dr. William T. Harris (late commissioner of education), as long ago as 1872. This plan divides a large school into something like thirty-two classes, representing steps of about one-fourth a year's work each, from the first grade to and including the eighth. Work is laid out on the basis of the average class as determined by experience. Some classes do more than this amount, others less; but there is no artificial time limit. The work of a quarter begins at any time of the year. Promotion to the high school occurs twice a year.

---

[22] "The Cambridge Experiment," N. E. A. 1894, pp. 338, 342.

Feasibility of promotion, with all that this implies, is the strong feature of this plan. It is twice as efficient in this respect as the double promotion system. Dr. Harris was clearly a pioneer in this field, and long ago he expressed his opinion of the group system as follows:

[23]"Thirty classes between the first and eighth years are possible in the large schools in cities. That all cities do not avail themselves of this possibility is one of the most serious defects in American supervision."

The Elizabeth Plan.

The [24]Elizabeth plan was introduced and successfully operated for a number of years in the schools of Elizabeth, N. J., by Superintendent William J. Shearer. It is little more than an elaboration of the St. Louis plan. It made from thirty to sixty grade divisions below the high school. Each division advanced just as far during the year as the ability of the students enabled them to do the work well. There was no set amount of work, and no time fixed for the completion of the course of study. Pupils worked in small classes in the "essential" branches only.

This scheme evidently intensifies all the commendable features of the St. Louis plan, and puts a little more definite emphasis upon the adjustment of the quantity of work to the ability of the students, independent of time limits for completion of the course of study. The objection may be raised that the scheme is quite complicated, and that it means so much machinery that (1) it is not feasible to hand it over to a successor without loss, and (2) there is likely to be a tendency to worship the machine. In spite of these objections, however, which are by no means confined to this system, we must not fail to see in this plan an admirable move toward reaching the ideal of efficiency in the individual by attempting to provide for the students largely as individuals, without losing the social principle.

The St. Louis and the Elizabeth plans both lay great stress on the matter of promotions. It is through promotions that they aim to give the individual special opportunities to advance as fast as ability permits. This they do by making a short step from class to class. Briefly told, their aim is to maintain plastic groups. This aim is good; yet when we realize that promotion has in itself no educational value whatever, and that under these plans promotion can hardly be accomplished without loss in the "jump", we must concede that both these schemes fall short of an ideal system of grading. Just what this lack is, may best be indicated later, in the treatment of the homogeneous group.

---

[23] "System of Grading Pupils in St. Louis," *Ed. Rev.*, Vol. 8, pp. 387-389.
[24] "The Elizabeth Plan of Grading," N. E. A., 1898, pp. 441-448.

The Double Tillage System.

The double tillage system is a New England product. It was in operation in the grammar grades of [25]Woburn, Mass., for a number of years (1894-1904), and since this city has given us a typical form of the system, it will serve our purpose here. (The plan has been named the "double promotion" system, but this name is not used here for the reason that it is now misleading.)

By way of introduction, it may be stated that the primary department in Woburn followed the plastic group scheme, thus enabling many students to complete the three years' work in less than the usual time. Beginning with the fourth grade, the "essential" features of each year's work were covered during the first semester of each year. Students who "successfully" accomplish this work, especially in language and in arithmetic, were advanced to the next higher grade at the semi-annual promotion. Bright students could thus pass through two grades in one year. During the second semester, the students who were not advanced (this meant the main body of the class), now joined by the influx from the next lower grade, again covered the ground (hence the term "double tillage") which they had hastily gone over during the first half of the year, but "in greater detail."

There is little to commend and much to condemn in this system. Clearly, its aim is to dismiss charges mentioned in indictments III, IV, V, and XII, against the lockstep. This it does, but only by going to a fearful extreme that puts the sin on the other side. It may be noted that, carried to its logical conclusion, this system would present the child to the high school at ten years of age. It may be advanced as all but proven that this pace must carry the child beyond the point of diminishing returns. The aspect of superficiality of the work makes one tremble; the teaching can surely not be other than mechanical, and the rush under the burden of the gouty modern curriculum is anything but commendable. Then, too, the second time over the ground, in spite of any theory to the contrary, is bound to mean pure repetition in the main, rather than work in "greater detail"; for it is to be noted that this work is new to the considerable number of "bright students" recently promoted to the classes. The system is interesting in that it shows what a desperate attempt has been seriously made to cure lockstep evils. We can admire the motive, if not the means and the end.

---

[25] "Grading and Promotion of Pupils," *Ed. Rev.*, Vol. 18, pp. 231-245.

The Review Back System.

Rather closely related to the double tillage scheme, is the review back system which seems to have found its most comfortable home in Iowa. LeMars, in this state, gives us a good type, as follows:

The class intervals are short, ranging from six to eight weeks in the primary grades, and from eight to twelve weeks in the grammar grades. At [26]"suitable and varying intervals", each class is reviewed back to meet the next lower class. At this point, all students deemed competent, as indicated by the recommendation of the teachers and not by examination, are excused from review and promoted to the class reviewing to meet them. The rate of progress between reviews is determined by the abilities of the stronger members of the class, since the others are soon to review.

The aim of this system is strikingly similar to that of the double tillage scheme, though it may be far better worked out. We may concede that it removes the evils mentioned in indictments III, IV, V, VIII, and XII, against the lockstep. The fact that the plan provides for reviews at [26]"suitable and varying intervals", gives us a rather meager basis for the criticism of the system in general. What the suitable interval is, and how often it comes, are vital matters to be dealt with as specific instances arise. The fact that the intergrade intervals are short, may mean improvement over the double tillage scheme, though this is by no means assured. (I will state here that I have not found an instance in which the reviews are so frequent as to virtually reproduce the weaknesses of the double tillage system.) We are hardly ready to condemn the system, however, until we note that "the rate of progress between reviews is determined by the abilities of the stronger members of the class"; but here we see the double tillage evils with the time limit removed. Experience shows that the less the individual abilities vary in the different classes under this system, the less the attendant evils. In other words, we have the paradox, —the less the review back scheme is called into use, the better.

---

[26] Prince, "Gradation and Promotion of Pupils," *Ed. Rev.*, Vol. 15, p. 241.

The Concentric Work System.

The [27]concentric work system has been well worked out in the schools of Santa Barbara, California. The plan follows the group system in dividing each grade into three groups, A, B, and C. These groups work concentrically, A doing the work more intensively than B, and B more intensively than C. In arithmetic, by way of illustration, the C section works on the more simple relations, perhaps holding rather closely to objective work; B increases the complexity and abstractness, and A works in a still more advanced way. Promotion is from section to section, the C becoming B, the B becoming A, and A in turn becoming C in the next higher grade. Promotion normally occurs three times a year. The system also permits individual promotions, under the usual group system facilities. Promotion is based on the teacher's judgment. Individual promotion from section to section within the room, does not necessitate the usual "skipping" of work, but it merely places the student in a class where he may attack the work in a more comprehensive way, since he already knows the "compass points and the main highways" of the work.

This system has one strong feature to distinguish it from the St. Louis plan, but in other respects it may well be considered identical with that plan, with the number of groups in each room reduced from four to three. The distinguishing feature referred to is to be seen in the fact that the concentric scheme of work is closely related to the spiral method of attacking subjects, and promotion within a grade, therefore, is not a jump into strange subject matter, but rather a shift to a point where a deeper view of familiar subject matter is possible. Since this is made possible without additional machinery, indeed must reduce the machinery or else cause the spiral to turn too often, this feature is clearly commendable.

The Ungraded Class, or Individual, System.

In the so-called ungraded class, or individual, system, we again meet variety. We have the old familiar ungraded school, with its multifold classes; the modern ungraded class or ungraded room, which may be considered a refuge for the misfits under any system, and Mr. Search, in his "Ideal School", has attempted to

[27] *Ed. Rev.*, Vol. 19, p. 297.

give us an individual system based on the laboratory plan. The Search scheme was given a short trial in [28]Pueblo, Colorado. In this scheme, the school room takes on the laboratory, rather than the class room, aspect. The social principle is not lost, but the class recitation reaches almost to the vanishing point. "Always busy with advance work", is the watchword Mr. Search sets up.

Batavia, New York, gives us the best type of the individual system for critical purposes, for the reason that its plan has been worked out in quite definite detail.

The Batavia System.

The [29]Batavia plan aims to give definite place to individual instruction. This is the keynote. In each of the larger class rooms, this plan puts an additional teacher, whose function it is to take any student the moment he begins to lose ground, and bring him up through individual assistance. It is assumed that this requires the development of a technique different from that needed in class instruction, for two reasons:

1. The students are not allowed to ask for aid, but the teacher must discover their weaknesses and take the initiative.
2. All individual instruction must be given by the development method, thus avoiding too much help.

While the "extra teacher" is the ideal plan in this scheme, this is not demanded in the smaller rooms; indeed, more than one-half of the Batavia class rooms have but a single teacher. It is noteworthy that the distinctive demand is that definite place be given to individual instruction. This is made possible in the one-teacher rooms by what is called a "doubly alternating" program. In this program, each alternate recitation period is given over to the individual instruction of the weaker members of the class. The individual period and the class period thus alternate in each subject of the program. (First alternation.) Similarly, the individual period in one subject alternates with the class period in the next subject of the program. (Second alternation.) Under normal conditions, therefore, two individual periods never come together. During the individual period, the students assisted are called to the teacher's desk one at a time, while others work independently at their desks. Tests, prepared by the superintendent, are given at the close of each term, and all promotions are made on the basis of these tests.

This system strives to escape the charges against the lockstep mentioned under indictments I and IX. It may be conceded that it quite escapes the ninth charge, since it devotes one-half the teaching effort toward avoiding the usual failures. It escapes the first indictment in so far as the students receive individual attention. It also meets successfully the tenth indictment.

---

[28] Search, "Individual Teaching: The Pueblo Plan." *Ed. Rev.*, Vol. 7, pp. 156-170.
[29] Bagley, "Class-room Management," pp. 214-224.

On the other hand, the third and the seventh indictments hold against this system with double force, and the fourth is lifted into bold relief. Double exertions are here put forth in the attempt to cast students—weak, mediocre, and strong—in the same mold. No one could criticise this plan for its attempt to help the poor weak student; but it would be interesting to hear the argument for placing this increased stress upon the weak, rather than upon the strong; and doubly interesting to hear the alleged reasons for reducing to one-half, in the one-teacher rooms, the time of the teacher to which the bright students are entitled. This is clearly in violation of the principle of economy, for the time and expense devoted to the more gifted students would yield far greater returns. We are altogether too easily deceived by the time-worn argument that the gifted student, "the genius" perhaps, will "get along somehow without much teaching." The fact is, the gifted Maud S. and the brilliant Dan Patch are the ones who need the closest attention of the skilful mechanic. It is this plug that economy first abandons. Then, when it comes to reducing the number of recitation periods in the smaller rooms to one-half, by the "doubly-alternating" program scheme, and giving to the weaker students the time and attention thus wrested from the brightest members we wonder if the next step will be to rule the bright minds out of school privileges entirely in so far as the guidance of the teacher is concerned. Here is a system which has evidently gone to extremes in the matter of favoring the dull student. It clearly violates the principle of economy.

It may be noted that the one-teacher room reveals another weakness in this scheme. During the individual periods, the teacher is engaged with one student while all the others in the room are supposed to be "working independently at their seats". It is commonly conceded that the study period is one of the most serious problems confronting us. The teacher who has tried the plan of spending a half hour instructing students singly at her desk, with forty others to be kept "engaged at their seats," will readily conceive the difficulty of supplying independent work, under such conditions, for forty students of widely varying abilities, to say nothing of the problem of discipline.

Finally, the Batavia plan expressly states that all tests are prepared by the superintendent, that they are given at the close of each term, and that all promotions are made on the basis of these tests. The stated reasons for these tests are (1) to check the tendency toward "coaching", and (2) to avoid the pernicious influence of "soft pedagogy". Now, were these tests aimed alone at the teacher's work, they would still be unjustifiable as a means of protecting the students against poor teaching. It would be putting the "burden" upon the innocent. The tests are conceded to be used, however, as a basis for promotion. Now I believe we have reached the time when we are ready to admit that the teacher who comes into intimate daily contact with pupils, is far more favorably situated than the superintendent, to pass sound judgment on the matter of promotion. We have followed a bad tradition too long already. A few examination questions can best give but a poor insight. It is to be hoped that our educative processes produce real living effects, emotional, volitional, and intellectual, that cannot be measured in any such simple and formal way. Furthermore, the test at the end of the term gives us not only the familiar pernicious cramming, but it puts too great strain upon the child when he is least able to bear it.

The Minimum Work System.

The minimum work system has been worked out on a broad basis in Denver, Colorado. The Denver plan[30] maintains the half year interval in the grammar and the high school grades, but shorter intervals below the grammar grades. Promotion periods are not fixed in the primary grades, but in the grammar grades the semi-annual scheme is followed. By the time the grammar grades are reached, all students are held for definite minimum requirements. Each room is provided with supplementary sets of books and a carefully selected reference library of from fifty to seventy-five volumes. While those students who can hardly accomplish more than the minimum requirement in a given subject are mastering a given assignment in that subject, other students who are capable of doing more work, yet not quite suitable for promotion, are, "by a process of natural selection, detaching themselves temporarily from the class" in order to work on studies in which they are weak, or "for broader or deeper study of topics by means of reference books, or for gathering illustrative material, or for following some line of interest approved by the teacher." Those who are thus excused are liable at any time to be required to rejoin the class "in order to assist others." The privilege is cancelled promptly when a satisfactory degree of proficiency is not reached. A few experiences of this kind make the students cautious, and the earlier they occur, the better. "The central thought in the system is individual responsibility".

---

[30] Proc. of N. E. A., 1898, pp. 434-441.

It may be fairly said that this system, more than any other, must look to the teacher for its value. The experienced teacher readily sees what this "personal responsibility" means. We have all seen teachers who could make a beautiful showing with this system; we have seen many more who would make a beautiful failure out of it. The system is commendable on the whole, for it reveals an admirable attempt to rescue the individual from the mass; yet withal, it is dangerous, more constantly so than the one-teacher Batavia scheme, since every student will be excused in at least one study, some of the time. A student who could not be, would be unhappy indeed.

Beyond the fact that this system may give a good account of its efforts to remove the charges mentioned in indictments I and VII, it is claimed that under this plan the students are definitely trained in the use of reference materials; that there is no hurrying through the grades; that it evens up the various studies, and that it enables the teachers to devote time to the less able students without robbing others.

The claim that the system definitely plans to train the students in the use of reference materials, is to be conceded unequally true, and decreasing in proportion to the scholarship. The "no hurrying through the grades" claim is to be granted, but this not only may become a negative weakness, but it certainly tightens the grip of indictment XII. The claim that it "evens up the various studies" is clearly true, and this lifts into beautiful prominence the law of multiple subjects which is given later in the treatment of the homogeneous group system. The claim that it enables the teacher to devote more time to the less able students without robbing others, is a doubtful half-truth. The principle of economy is more than likely to creep in here as in the Batavia scheme.

For the sake of emphasis, it may be repeated in part that the strong feature of this system is the definite aim to reach the individual, and the best means of working out this aim is to be seen in the privilege offered the student to follow out "some line of interest approved by the teacher". Under skilful management this may become an invaluable means of cultivating the spirit of "self-direction, self-initiative, self-realization, self-perfection, and self-assertion", which Münsterberg finds at the basis of American success.

The Homogeneous Group System.

There are two principles which must underlie the ideal system of grading and promotion, whatever that system may be:

1. The individuals of the grade are to be socialized.
2. The instruction of the grade is to be individualized.

How now are these apparently contradictory requirements to be realized? Were it possible to bring together a group of children exactly alike from the educational standpoint, it would seem that our problem had found a solution; for we could then realize our social principle and yet have the instruction individualized, since method and material adapted to one would be likewise adapted to all. Such a group, however, is not at hand. It could afford a very poor training if it were. Nowhere in society do we find people exactly alike, and if we could find such similarity it would be a poor, monotonous society, lacking the wholesome stimulus which comes from diversity. It is the diversified society in which the individual should be trained; and fortunately, nature has given us nothing else for our schools. The best training is possible only in a society made up of persons sufficiently alike to enable them to understand and to sympathize one with another and to work together for their common good, yet sufficiently unlike to reveal the advantages and the needs of so working together. Our problem of grading and promotion, then, is that of selecting from a highly diversified society, groups of children sufficiently alike to be similarly treated. We want them just as much alike as we can get them, since natural conditions are such that there is not even remote danger of overdoing this selective process. Stated in other words, the school grades are to be homogeneous groups.

Since human beings are so specialized in abilities, it becomes a far more different process to select a group of children sufficiently alike in abilities in all the usual school subjects. This means that in the best system of grading, the group in one subject is not at all likely to be individually identical with the group in another subject; hence the large school, with the larger field of selection, will continue to have its advantages in grading over the smaller school.

Apropos of the point brought out in the last paragraph, there is a working principle, not uncommon in experience, which is worth formulation and definite statement. It may be expressed as follows:

The Law of Multiple Subjects.

An increase in the number of subjects in the school curriculum, tends to move the average standing of an individual toward the class average.

Stated in other words, student abilities commonly vary more in one subject than in the average of all subjects. This means some relief for the system using the one class for all subjects; since with many subjects under this system, the student's average ability is likely to deviate less from the class average than if there were but one subject.

Furthermore, this variation has an intrinsic basis, with reference both to the individual and to the subjects; therefore, whether the problem of multiple studies is viewed as a matter of correlation or of differentiation, the law of multiple subjects remains valid.

Again, it is to be noted that we may have a group of students equally prepared to attack any given subject matter, say long division. Such a group we may say is statically homogeneous. Some of them, however, may be competent to master the processes far more rapidly than others; that is, the group may not be dynamically homogeneous. Now it is dynamic homogeneity for which we are to look, rather than static; though it is the latter which we have so long sought. With something like static equality to begin with, the dynamically equal group will in itself take care of the question of static homogeneity, while such a group makes it possible to work each student up to the measure of his ability; and the problem of individual promotion disappears in the degree in which this condition is reached. All this serves to show (1) that the matter of grading is far less simple and formal than is indicated by most of our systems; (2) that personal acquaintance, with adequate insight into our students, is a matter of far more vital consequence in the problem of grading and promotion than any machine can be, and (3) that the familiar "ten examination questions" sink to wretched assumption in view of such a standard.

One of the most serious obstacles in the way of effective grading and promotion is found in the ever ready belief that there is "a system" which will fit all conditions. The fact is, there must be about as many variations in a system as there are schools to use that system. We need to free ourselves from the notion that there is a ready-made form of anything that can fit two different things. It is a matter of common observation that no two schools move under identical conditions. We must follow the example of the tailor in first taking a general view, then making definite measurements, but not forgetting that the skill is shown in the fact that a little is allowed for here, and a trifle is taken up there, in order to make the final fit; that is, in order to make the best adjustment.

The school with an enrolment of eight hundred students in the eight grades, and the usual teaching force, may effectively classify its students into homogeneous groups in each subject; while the school with three hundred students may find its best adjustment in groups as nearly homogeneous as possible with reference to all the major subjects. Any system of grading is bound to grow less effective as the enrolment becomes small; and in the small school the only permanent rule is to realize the homonegeous group aim as far as possible with the means at hand.

Perhaps Germany has outdone us in the matter of realizing a system of grading on the basis of dynamic homogeneity. Dr. Sickinger devised and introduced (1899) at Mannheim[31] a system that has since become known as the Mannheim system. It is now used in Berlin, Leipsic, and other important cities of Germany. The system is essentially as follows:

The Mannheim System.

Proceeding squarely on the principle that the school must deal with the child according to his ability and development, four (or five) parallel courses are offered; namely,—

A, an eight year course for normal pupils to cover in eight years.

B, a five or six year course for retarded or dull pupils to cover in eight years.

C, a four year course for sickly and abnormal students to cover in eight years.

D, an eight year course for very bright students to cover in three or four years.

To these four courses is added a fifth, E, which is the preparatory school course (for students planning to enter the Gymnasium, Real Gymnasium, or Realschule, and who have completed course D).

Such is the external aspect of the system. When we come to the inner aspect, we find that in order to carry out the plan of the organization, the number of students per teacher is limited as follows:

---

[31] Moses, "Die Neuorganisation der Volksschule in Mannheim," Zeitschr. für Schulgesundheitspflege, XII, 1899.

Under Course A, 40 students.
Under Course B, 15 students.
Under Course C, no limit.
Under Course D, 40 students (smaller number usually found).

The treatment is modified to suit the needs of the groups, especial care being taken not to overtax students of groups B and C. The most experienced teachers are appointed to group C.

It may be noted that the Mannheim system resembles the double track system, though it offers four distinct tracks (D and E combine in one), with less shifting back and forth. It undoubtedly represents the most advanced scheme yet operated on the basis of dynamic homogeneity. It has its defects, to be sure. Classification is by grade, not by subject; hence the child has to spend most time on the subject in which he is least competent, and he gives the least time to the subject in which he is most gifted. He must serve his time in each subject. Indeed he may spend more time, but there is no way to shorten the time of a given subject for a given individual in a given group. The gap between groups A and D is far too great; and so here and there we see lockstep symptoms creeping in. The most that may be said for it is that it is an advanced step in the right direction.

Summary.

By way of summary it may be said (1) that we have reached a point in school administration where the lockstep system of grading and promotion is no longer tenable; (2) that the numerous systems which have arisen in the hope of curing lockstep evils have accomplished much; yet with full recognition that there are good factors in all of these systems, it is still very evident that not only do most of them tend toward machine-like administration, but that none of them gives us an adequate basis for conserving both the socialistic and individualistic principles which the present educational movement demands; (3) that these demands cannot be met in any simple, ready-made way; but (4) that they should be met by the classification of students into groups just as nearly homogeneous, both statically and dynamically, as the teaching force of any school can judiciously permit; and (5) that promotion and demotion should be based neither wholly nor mainly on the set examination, but rather on the deliberative judgment of those who come into daily living touch with the students.

—To be Continued

NEWS AND COMMENT.

Relation of Physical Defects to Retardation in Elmira, N. Y.

Under the auspices of the Social Service League, the Academy of Medicine in Elmira, N. Y., recently gave its services in an examination of all the second grade children in the city, with the purpose of showing the relation between physical defects and school retardation. The complete record of each child, both physical and mental, was entered on a card like the accompanying illustration, and all cards were then returned to the central office for tabulation by one person. It was found that certain defects were more or less persistent throughout the city.

Number examined	449	
Anaemic	16	per cent
Enlarged Glands	23	"
Nervous	2.7	"
Pulmonary Trouble	.6	"
Skin Diseases	2.2	"
Orthopaedic Defects	2	"
Rachitic	13.5	"
Defective Vision	22	"
Defective Hearing	4	"
Hyperthropied Tonsils	38	"
Adenoids	21	"

An examination of the school record of the same children shows that as the number of repeaters increases so does the percentage of defects:

Number retarded (104)	23	per cent
Repeaters with one defect	21	"
Repeaters with two defects	30	"
Repeaters with three or more defects	38	"

The table on page 98 shows that in the number taking three and four years to complete the work of the second grade there is an increasing percentage of defective children. Those taking five, six and seven years are too few to warrant drawing any conclusion. The increasing per cent—19 per cent for the two year, 21 per cent for the three year, and 40 per cent for the four year children—of those having adenoids, is significant.

One unusual result, in direct opposition to that found by most investigators of the relation between physical defects and mental retardation, is that concerning defective vision. It has been found in Elmira that with these children there is a definite increase of percentage of those with eye-trouble as the number of years required to complete the grade increases.

D. C. Bliss, *Supt.*

EFFECT OF PHYSICAL DEFECTS ON PROMOTION

Years spent in 1st grade	Total Number Pupils	Adenoids		Hypertrophied		Anæmic		Enlarged Glands		Defective Vision		Defective Hearing		Rachitic	
		No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent	No.	Per cent
2	345	67	19	141	40	52	15	77	22	72	21	17	4.9	38	11
3	86	1 8	21	25	29	15	17	19	22	21	24	3	3.5	19	22
4	15	6	40	8	53	4	27	6	40	4	26	1	7	3	20
5	1	1	100	1	100	0	0	0	0	0	0	0	0	0	0
6	1	1	100	0	0	0	0	0	0	0	0	0	0	0	0
7	1	1	100	0	0	1	100	0	0	1	100	0	0	1	100
Totals for Retarded Pupils	104 23 per cent	27	26	34	32	20	19	25	24	26	25	4	4	23	22

The Psychological Clinic Classified Advertising Department

ADVERTISING RATES

Hotels and Resorts, Apartments, Summer Camps, Tours and Travel, Special Schools, Educational Institutions, twenty-five cents per agate line. Not less than four lines accepted. In calculating space required for an advertisement, count an average of six words to the line unless display type is desired. The first word of each advertisement is set in capital letters without additional charge. Other words may be set in capitals, if desired, at double rates. Special headings appropriate to the department may be arranged for upon application.

ORDERS AND COPY FOR CLASSIFIED ADVERTISEMENTS

must be received with remittance ten days before the month in which it is intended the advertisement shall first appear. Address ADVERTISING DEPARTMENT, THE PSYCHOLOGICAL CLINIC, Thirty-sixth and Woodland Avenue, West Philadelphia.

MEDIA, PENNSYLVANIA

THE FARM SCHOOL

A Private School for Boys Requiring Individual Instruction or Discipline

Situated on a farm of fifty acres. Summer and winter sessions.
Limited to six boys. A systematic routine of school work, out door work, and play, insisted upon. Constant personal oversight.
Summer term in part, spent on Maine coast, where school work is still kept up, although the life is freer and rougher, with more time devoted to recreation.
Boys entered for whole or part of year. For particulars, address,
Phone: Media 144 y. H. C. PORTER, Ph.D., R. F. D. 3, Media, Pa.

PHYSICAL TRAINING FOR BOYS

A Book written specially for teachers in schools that have no gymnasium; containing many simple effective exercises, fully illustrated.
By CHARLES K. TAYLOR.

Price 55 cents postpaid

FOR SALE BY
STRAWBRIDGE & CLOTHIER,
Philadelphia, Pa.

The
John C. Winston Co.

Commercial Printing of the highest standard only.

Educational, Literary and Scientific publications our specialty.

The Mechanical equipment is of the latest.

Printers
Publishers
Bookbinders

Best Material and Workmanship

1006-1016 Arch St., Philadelphia

Psychological Monographs

A SERIES OF EXPERIMENTAL STUDIES IN PSYCHOLOGY AND PEDAGOGY

EDITED BY
LIGHTNER WITMER
University of Pennsylvania

1. Spelling in Elementary School. An Experimental and Statistical Investigation. 1902. 98 pp. 16 figures in the text and an appendix of 26 tables. Price: cloth, $1.25; paper, $1.00.
   By Oliver P. Cornman, Ph. D., District Superintendent of Schools, Philadelphia.

   "Dr. Cornman has made an extensive investigation of the ability of school children in Philadelphia schools in the subject of spelling, and studied his results with such care that his work deserves special attention." Professor W. H. Burnham. *The Pedagogical Seminary.* Vol. VIII. No. 4, Dec., 1906, p. 491.

2. The Sensation of Pain and the Theory of the Specific Sense Energies. 1902. viii + 87 pp., with one table and two figures in the text. Price: paper, $1.00.
   By Anna J. McKeag, Ph. D., Professor of Pedagogy, Wellesley College.

   As a result of an experimental investigation of the reaction of a number of subjects to painful stimuli, the author first presents an analysis of the pain judgment, which is presented either as a general or unforced judgment, or as a judgment in which the subject is required to give expression to the perceived qualitative distinctness and discreteness of the sensation. The relation of pain and touch to various stimuli is given consideration. In an important chapter a resume of the history of the theory of the specific sense energies is given, with special reference to the sensation of pain, and an examination is made of the physiological basis of pain in the periphery and nerve centres.

3. The Application of Statistical Methods to the Problem of Psychophysics, 1908. 221 pp., including 94 tables. Price: paper, $2.50.
   By F. M. Urban, Ph. D., University of Pennsylvania, Philadelphia.

4. Two Experimental Studies of the Insane. I. The Train of Thought. II. Some Physiological Conditions accompanying States of Depression. 84 pp., 3 inserted tables. Price: paper, $1.00.
   By Clara Harrison Town, Ph. D., Resident Psychologist at Friends' Asylum for the Insane, Frankford, Philadelphia, Pa.

5. A Clinical Study of One Thousand Retarded Children in Camden, N. J.
   By J. D. Heilman, Ph. D., Professor of Psychology, State Normal School, Greeley, Colorado. 106 pp., including 23 tables. Price: paper, $1.00.

THE PSYCHOLOGICAL CLINIC PRESS
Woodland Ave. & 36th St. Philadelphia, Pa.

Pages [illegible]

VOL. V. NO. 4 **JUNE 15, 1911**

THE Psychological Clinic

For the normal development of every child

PSYCHOLOGY HYGIENE EDUCATION

Editor: LIGHTNER WITMER, Ph. D., University of Pennsylvania

CONTENTS

AN EXPERIMENTAL-CRITICAL STUDY OF THE PROBLEM OF GRADING AND PROMOTION, *W. Franklin Jones, Ph.D.,* Head of Dept. of Psychology and Pedagogy, Maryland State Normal School, Baltimore, Md. (Concluded) 99

A SCORE OF DIFFICULT BOYS, *Ralph L. Johnson, M.A.,* Girard College, Philadelphia, Pa. 121

REVIEWS AND CRITICISM: *Mental Discipline and Educational Values,* William Harry Heck 128

NEWS AND COMMENT: *Educational Aspects of Christian Science—A Reply and a Rejoinder; Fatigue and School Work.* 129

THE PSYCHOLOGICAL CLINIC PRESS
Woodland Ave. and 36th St.
Philadelphia, Pa.

PRICE TWENTY CENTS

THE PSYCHOLOGICAL CLINIC

A Journal of Orthogenics

For the normal development of every child

PSYCHOLOGY HYGIENE EDUCATION

Subscription price, $1.50 per annum (nine numbers). Single numbers, 20 cents. Foreign subscription price, $1.75.

Published monthly except July, August and September, by Lightner Witmer, College Hall, Woodland Avenue and Thirty-sixth Street, Philadelphia, Pa.

Entered as second-class matter February 12, 1908, at the post office at Philadelphia, Pa., under the Act of Congress of March 3, 1879.

We are sure that any one who sees THE PSYCHOLOGICAL CLINIC will subscribe, and if he once subscribes, he will renew his subscription year after year, as the vast majority of our readers are doing. Will you give your friends this opportunity?

To save us the trouble and expense of sending out bills for renewals, we make an offer which at the same time will be advantageous to our subscribers. The regular subscription price of THE PSYCHOLOGICAL CLINIC is $1.50. We will accept a two years' subscription for $2.50 (absolutely net) paid in advance; and three years' subscription for $3.50 (absolutely net). This will enable subscribers to the current volume to obtain THE PSYCHOLOGICAL CLINIC from the beginning and including the present volume for $6.00, a saving of one dollar and a half.

Send subscriptions and all communications to

THE PSYCHOLOGICAL CLINIC PRESS
Woodland Ave. & 36th St. Philadelphia, Pa.

The Psychological Clinic

Copyright, 1911, by Lightner Witmer, Editor.

Vol. V, No. 4. June 15, 1911.

AN EXPERIMENTAL-CRITICAL STUDY OF THE PROBLEM OF GRADING AND PROMOTION.

By W. Franklin Jones, Ph.D.,
Maryland State Normal School, Baltimore, Md.

(*Continued.*)

Part II. The Dynamic Aspect of the Problem.

In the preceding part of this paper it was stated that personal acquaintance with the capacity of the student is the vital thing in any handling of the problem of grading and promotion. It may also be said that this is the vital thing in any teaching. Given a bit of subject matter, an impersonal experience, which is to be communicated from one individual to another, we must have two conditions fulfilled before the aim can be realized, (1) the one who is to receive the impersonal experience must have a stock of personal experiences adequate to give meaning to the subject matter; and (2) the impersonal experience must be presented in such a way as to call forth and utilize these personal experiences. Personal acquaintance with the student must therefore reach out in two directions, (1) the teacher must know what personal experiences the child has which she can utilize; and (2) she must know how to present any given bit of subject matter so as to call forth and utilize these personal experiences. It is the second of these two essentials with which we are now to deal.

After the teacher has assured herself as to what personal experiences of the child she can use in teaching any given bit of subject matter, her next serious problem is that of determining how to present the subject matter so as to get the best response from the child. Moreover, since we are engaged in class teaching, the teacher's problem is actually enlarged to the still more serious task of presenting the given subject matter so as to extract the best responses from the minds of a group of students. If one child is chiefly auditory in his stock of experiences related to the given subject matter, then a presentation suited to an auditory response is more likely to succeed with him. So, too, a visual presentation favors a visual response; a motor presentation, a motor response; and so on. A knowledge of the ideational types of school children is therefore a matter of deep concern in teaching; and a study of the relation of ideational types and the method of presenting subject matter may throw some light on the problem of grading and promotion.

The Problem of Discovering the Ideational Types of School Children.

Many psychologists and many students[1] of education have recently been busy with the problem of ideational types. We have made some progress in this field, especially in the study of adult minds; but we may as well frankly admit that so far we have found no reliable means of determining whether a child is really visual, or auditory, or motor-minded. The difficulties in the way when we attempt to study the child mind are chiefly as follows:

1. Introspection is needed to save us from all sorts of errors, and the child is not gifted in this field. Indeed, we have found that even the adult student of psychology needs considerable training in introspection before he can give us reliable data.

2. It is essentially true that all minds are mixed types; that is, visual in reference to one experience, auditory in reference to another, kinaesthetic, cutaneous, olfactory, gustatory, and organic, in reference to others. Then there are the compounded reactions: auditory-motor, visual-motor, and so on; and the differentiated forms, visual-verbal, visual-concrete, speech-motor, eye-motor, hand-motor, and so on.

3. Any given mind is likely to change in its type of response to a given stimulus as experience widens. As the child develops, the visual-concrete is probably ever ready to become visual-verbal, hand-motor imagery comes in, and so on. The adolescent mind is probably a shifting and variable quantity in its ideational responses.

In the face of all these manifold responses, our objective tests have failed, and we are beginning to realize that objective tests without introspective details can hardly reveal mental types. It is the old lesson on objective evidence learned over again. Then, since reliable introspection requires a degree both of attention and of analysis that is not found in the child, we can see the justification for the statement that so far at least, our means of penetrating the child mind are very questionable cues to ideational types.

---

[1] Perhaps the most active student in this field at present is Colvin. See bibliography.

What is the Evidence of Ideational Types?

There is another difficulty that meets us here, namely, we are not agreed as to what evidence we shall say reveals the ideational type. Shall we say that the mind's reaction to an immediately present stimulus is the evidence? Or, rejecting this primary response, shall we accept as evidence the response which the mind makes when it is freed from the immediate spell of the stimulus? In other words, shall we classify according to the primary or the secondary response? The two by no means necessarily agree, as may be seen by the following tests with trained introspectionists:

The German word "Anziehung" was pronounced aloud by the experimenter, then the subjects (trained introspectionists) counted aloud to twenty (distraction method), and then wrote the word as they understood it.

Introspection of first subject.—"(1) My primary response was wholly auditory. I heard the word 'Anziehung', and the voice of the speaker rang in my ears. (2) My secondary response was wholly visual. The moment I started to write the word the visual image of it flashed into my mind; and I could see the word almost as distinctly before I wrote it as after." (This subject had acquired German from books, and could not speak it freely.)

Introspection of second subject.—"(1) I heard the sound of a strange word, and found my vocal organs trying to reproduce it. No visual image whatever. (2) After counting and starting to write, I saw the word in my mind and I visualized it before and during the writing. Purely visual." (This subject was known to be visual in German.)

Introspection of third subject.—"(1) I heard a combination of syllables, but the word had no meaning to me. I saw nothing; but the sound lingered, and a faint inner speech was at work. (2) The first syllable was reproduced from the sound which still lingered after repeating the numbers. So much purely auditory. The remaining two syllables came through audition and voco-motor imagery."

Referring now to the first subject, shall we classify him according to his primary response? If so, he is auditory in this instance. Shall we classify him on the basis of his secondary response? If so, he is visual. As to the second subject, he is auditory-motor if classified according to the first response, and "purely visual" according to the second. The third subject may be classified on the basis of either primary or secondary response without change.

It is a significant fact that these subjects all accepted the classification as shown by the secondary response, but that the first two refused to be classified on the basis of the primary response. It is not to the present purpose to try to settle this matter here; bu there is strong evidence that, with further study, we shall come to accept the secondary response as the only reliable evidence of mental types. When the individual is enslaved by the immediate presence of the stimulus, he is hardly free to reveal himself. Now, if we do accept the secondary response, and not the primary, as the real cue to ideational type, it is evident that we are confronted with a new difficulty when we attempt to discover the types of children. At present, the only certain statement is that the problem of discovering the ideational types of children is a hard and complicated problem, with no reliable solution at hand.

Believing, as it seems we must, that the child mind is all the time responding in manifold ways, we can at least allow for each and for all types in presenting subject matter, and see if any effects are evident. This is, in part, what Lay, Itschner, Fuchs and Haggenmüller,[2] and others have done in their studies of the spelling problem.

Study No. 2.

Proceeding on the assumption that a series of experiments, in which the different kinds of presentation, visual, auditory, etc., are controlled, might throw some light of student capacity, and hence upon the problem of grading and promotion, I have made two series of experiments, using (1) a senior class of normal school students (females), already familiar with experimental methods; and (2) an eighth grade whose members (males) were believed to vary widely in mental abilities. The object of these experiments may be stated in the form of two questions:

(1) What is the relation of the kind of presentation of subject matter to student capacity?

(2) What light does the study throw on the problem of grading and promotion?

---

[2] All these are summarized in Psy. Rev. Monograph, No. 44, 1909, pp. 131, 132.

I. *Normal School Tests.*

Using three-letter nonsense syllables, four series of tests were made on a class of sixty-four normal school seniors, all females, ranging from eighteen to twenty-four years of age. Each series comprised three tests of ten nonsense syllables each. A new list of syllables was used in each test. The syllables were known at sight by the students, since the list of one hundred syllables from which they were selected was made familiar in order to avoid complication of records through mis-spelling. A suggestive portion of the list is given below.

mil
hib
nop
gan
col
mon
pol
num
lus
bim
tor
nen
tiv
lun
ris
wes
nep
har
fac
rav
bab
ron
lat
nid
zel
mip
bik
nup
gog
ter
sen
han
cal
sep
nus
ret
nol
tam
nad
mul
lab
teb
bal
cam
ral
pel
rof
hon
com
rem

The nonsense syllables were made familiar by exposing the whole list, alphabetically arranged on the blackboard, for several days. The students knew the purpose, and they were allowed to read or scribble them daily. It has already been stated that the object of this procedure was to eliminate the spelling test. It is a fact that the nonsense syllable test as usually employed is largely a spelling test. The order and position of the syllables in the tests were not counted, for the reason that a test in learning and immediate memory was sought, rather than a test of "rote memory."[3] (Meumann's[4] system of marking nonsense syllables does not alter the results of these tests.)

The first three-test series was made with visual presentation. A simultaneous exposure of ten seconds was made from a blackboard with each separate list. At the expiration of ten seconds the curtain was drawn over the lists, and immediately each student wrote the syllables she remembered. The second series proceeded similarly with auditory presentation, each list being read by the experimenter in ten seconds. The third series was presented

---

[3] Whipple's Manual of Mental and Physical Tests, page 356.
[4] Die Experimentelle Pädagogik, I, 1905, p. 67.

(simultaneously) on the blackboard, and the syllables were rapidly written by the students, thus combining a visual and a motor presentation; time limit, twenty seconds. The fourth series combined an auditory and a motor presentation, each syllable being pronounced by the experimenter and rapidly written by the students; time limit again twenty seconds. Finally, a series of three tests of sixteen syllables each was given by a four-fold presentation, as follows: (1) Seeing, sixteen seconds; (2) Hearing, twenty-four seconds in reading; (3) Reading aloud, twenty-four seconds; (4) Writing, thirty-two seconds. One presentation here was immediately followed by the next, with no loss of time between.

The final writing of the tests was never hurried, but only a reasonable time was allowed. A short breathing spell was given after each test, and a three-minute recess followed each series of three tests.

A summary of the scores is given below, indicating the total number of syllables written by all the students in each test. The order and position of syllables were not counted.

SUMMARY OF SCORES REDUCED TO PER CENT AVERAGES.

	Visual.	Auditory.	Visual and Motor.	Auditory and Motor.	Combined Visual-Auditory-Motor.
Group 1	549=70%	461=60%	603=77%	518=66%	863=69.15%
Group 2	353=56	442=70	403=64	480=76	693=68.75
Group 3	279=55	296=58	378=74	397=78	551=67.5

TIME ALLOWED.

1. Visual presentation	10 syllables,	10 seconds.
2. Auditory presentation	10 “	10 “
3. Visual and Motor presentation	10 “	20 “
4. Auditory and Motor presentation	10 “	20 “
5. Combined presentation	16 “	96 “
a. Visual		16 “
b. Auditory		24 “
c. Concert reading		24 “
d. Rapid writing		32 “

In compiling the results the students were grouped so as to make handling convenient. It may be remarked that the first group of students (26) gave best results, roughly speaking, wherever visual presentation came in; that the second group (21 students) reached best results wherever auditory presentation was made, while the third group (17 students) showed best results wherever motor presentation came in. In the last series of the tests, no attempt is made to distinguish the hand motor from the speech motor types. Furthermore, no effort was made during the tests to inhibit silent movements of tongue, lips, and so on, for the reason that (1) it would have been impossible to keep them out entirely, and (2) no distractions were welcome here.

Many facts of interest are revealed by this experiment, but for our present purpose the one significant fact is that these three groups of students (we may roughly call them optiles, audiles, and motiles) vary widely in abilities wherever a single form of presentation is given, less widely when a two-fold form is used, and when the presentation covers all three forms (visual, auditory, and motor), the variations, both as to individuals and to groups, are reduced to narrow limits. This may be made clear by the following:

TABLE OF VARIATIONS.

Form of Presentation.	Low Score.	High Score.	Total Average.	Mean Variation.	Per cent Variation.
Visual	13	24	18.45	2.43	13.12
Auditory	12	24	18.73	1.82	9.72
Visual and motor	16	27	21.63	1.75	8.09
Auditory and motor	15	26	21.80	1.73	7.94
Visual, auditory and motor	25	39	32.92	2.60	7.90

The three groups show the following variations under the different forms of presentation (see table on preceding page):

GROUP VARIATIONS.

	Average Score (Per cent).		
	Group 1.	Group 2.	Group 3.
Visual presentation	70	56	55
Auditory presentation	60	70	58
Average for single form	65	63	56.5
Visual and motor presentation	77	64	74
Auditory and motor presentation	66	75	78
Average for twofold form	71.5	70	76
Threefold form of presentation	69.15	68.75	67.52

A well recognized fact now suggests itself; namely, that fourteen years of school work could not fail to eliminate a large per cent of the unfit, hence the narrow variations shown by these figures for normal school seniors may not typify the ordinary school grade.

My next purpose was therefore to perform a similar set of experiments on a common school grade, and if possible to find one of wide variation, so as to see what effects the kind of presentation of subject matter could reveal with such a grade. I selected an "Eighth Grade A" in one of the large schools in New York City. The grade was made up of forty boys (the preceding tests were with females, and females are commonly believed to vary less widely than males) who had met as wide a range of vicissitudes in school as any one would care to think of, and who were believed by their teachers to "vary from considerable ability to hopelessness". The series of tests made with these students were both more extensive and more intensive than had been attempted with the normal school seniors.

In order to make a genuine test of learning abilities with the different materials, a sufficient number of successive presentations was made with the subject matter so as to enable some, at least, of the students to command all of it. By so doing it was hoped to get a more definite idea of the working ability of the students. The tests included the following series:

I. *Learning Tests, with Multiple Presentation.*

1. Learning a list of thirteen nonsense syllables (selected from the list given on page 103). Five trials were given on the list before it was certain that some students had learned the entire list.

2. Learning a poem, three trials required,—

"I see the lights of the village
  Gleam through the rain and the mist,
And a feeling of sadness comes o'er me,
  That my soul cannot resist;
A feeling of sadness and longing
  That is not akin to pain,
But resembles sorrow only
  As the mist resembles rain."

3. Learning six historical events and dates, two trials,—
  1. 1829 (Mexico freed her slaves).
  2. 1763 (Mason and Dixon's Line established).
  3. 1800 (National capital moved from Philadelphia to Washington.
  4. 1610 (Hudson discovered Hudson Bay, and was there cast adrift and lost).

5. 1855 (Opening of railroad across the Isthmus of Panama).
6. 1819 (First steam vessel crossed the Atlantic, sailing from New York).

4. Learning a list of technical terms, with meaning; two lists, one trial each,—

First List.

1. aberration (wandering).
2. entomology (study of insects).
3. regurgitate (flow back).
4. fulmination (explosion).

Second List.

1. efficacious (having desired effect).
2. malignant (very harmful).
3. hydrotropic (water-seeking).
4. defoliate (deprive of leaves).
5. geotropic (turning toward the earth).
6. effeminate (womanish and weak).

(Each term used in a sentence to give meaning.)

5. Learning a list of historical names, one trial,—

1. Abelard (French scholar).
2. Glaucus (mythical character; torn to pieces by his own horses).
3. Abimeleck (Bible king).
4. Nineveh (ancient Assyrian king).
5. Polonius (a trickster in Shakespeare).
6. Xerxes (a Persian king).

The above tests were all given on the afternoon of the last school day preceding Christmas. In the forenoon of the first school day after New Year's (and following an eleven day vacation) the following tests were made with these students:

II. *Memory and Relearning Tests.*

1. A memory test with no assistance whatever, to see how many of the thirteen nonsense syllables, learned eleven days before and with holiday thoughts in between, each student could now produce. Then two other tests on relearning the list of thirteen syllables under the same conditions of presentation as were used in learning the list before the holidays.

2. A memory test on the poem, with no assistance. Then two relearning tests on the poem under same condition of presentation as before.

3. A memory test on the six historical dates, with events. Then two relearning tests under the usual conditions.

In each of the preceding tests, both in learning and in relearning, the following multiple presentation was made: (1) seeing; (2) hearing; (3) seeing and reading aloud in concert; (4) seeing and copying rapidly on paper.

III. *Learning Tests, with Single Presentation.*

Finally, two series of three tests each, one series with visual presentation alone, and the other with auditory presentation alone, were made for the purpose of deriving standards of variation under such forms of presentation. Each of these series comprised the following tests:

1. Learning a list of four historical dates or names, with identification as before; two tests (one in each series) of one trial each,—

First Series (*dates*).	*Second Series* (*names*).
1. 1815 (Napoleon defeated at Waterloo).	1. Alfonso (King of Spain).
2. 1469 (Mouth of Congo discovered).	2. Kruger (President South African Republic).
3. 1799 (Washington died).	3. Fortinbras (Norman King).
4. 1823 (First successful telegraph line in world, built from Baltimore to Washington, by Samuel F. B. Morse).	4. Abiathar (Bible name).

2. Learning a list of four technical terms, with meaning, two tests (one in each series) of one trial each,—

First Series.	*Second Series.*
1. miniature (small copy).	1. lepidoptera (scale covered wings).
2. orthoptera (straight winged).	2. malfeasance (wrongdoing).
3. gratuitous (without cost).	3. posthumous (occurring after death).
4. immanent (dwelling within).	4. saponify (to make into soap).

(Each term was used in a sentence to give meaning.)

3. Learning a list of eight nonsense syllables, two tests (one in each series) of one trial each. (The syllables were selected from the list given on page 103.)

In deciding upon a system for marking this wide range of tests, many difficulties were encountered. It was the dominant purpose (1) to make the tests simple, yet closely following the lines of ordinary school work; and (2) to grade the tests without deviating too far from established scientific methods, yet again following closely the methods used in ordinary school work. After considerable deliberation, the following plan was adopted for marking all of the tests:

1. The right term, or fact, or meaning counted one point.
2. The right order of the term, etc., counted one point.

It may thus be seen that if two or more dates (or terms, etc.) were correctly given, but their places interchanged, they were scored one-half value. So, too, in any list, say of nonsense syllables, an omitted term was simply counted out without affecting the score of succeeding terms. To illustrate, if only three out of ten nonsense syllables were given, say the first, the fifth, and the last of the list, each syllable was scored two points if the three were in the correct order; but if the "last" syllable preceded the middle one, we may say, then each of the last two counted only one point. Students were thus not required to mark spaces for omitted terms. In no case was a part of a term counted, but each term was counted either right or wrong as a whole.

The nonsense syllable tests were later scored according to the marking system employed by Cyril Burt,[5] which is but a slight modification of the Meumann system. The purpose of this double scoring was to furnish a basis for comparison, in order to determine whether or not the simple system here used for all tests was deviating too far from the usual scientific methods. It is interesting to note here that the Cyril Burt system gave a record in general somewhat higher than that given in the accompanying table, but that in no case did it make a significant change in the variability; and variability is the important fact in these tests for the purpose in hand.

A summary of the scores for all the tests is given in the following table. The ages of these students varied from fourteen years and three months to sixteen years and ten months; average age, fifteen years and nine months. The grouping follows the plan used in the normal school table; namely, the first group (thirteen students) comprises all who reached their best results, roughly speaking, under visual presentation; the second group shows students (sixteen) who succeeded best under auditory presentation; and the third group (eleven students), those who did best under the motor presentation when it came in.

---

[5] *British Journal of Psychology*, Dec., 1909, page 142

SUMMARY OF SCORES REDUCED TO PER CENT AVERAGES.

Groups.	Combined-form Presentation.						
	I. Learning.				II. Relearning.		
	Syllables.	Poem.	Dates.	Tech. Terms.	Syllables.	Poem*	Dates.
1	950 = 73%	1137 = 87%	1208 = 93%	1175 = 90%	697 = 58%	571 = 71%	848 = 71%
2	1136 = 71	1414 = 88	1488 = 93	1404 = 88	1427 = 89	405 = 68	1080 = 72
3	818 = 74	891 = 81	1048 = 95	1026 = 93	977 = 89	552 = 69	759 = 69

	III. One-form Presentation.	
	Visual.	Auditory.
1	650 = 54%	501 = 42%
2	589 = 39	842 = 56
3	432 = 39	462 = 42

(*See statement on page 112 with reference to ruling out certan scores.)

The following condensed table of variations reveals the significant facts of the results for our present purpose:

TABLE OF VARIATIONS. (PER CENT RECORD.)

		MULTIPLE PRESENTATION (LEARNING).					Averages.	
		Score. Low.	High.	Total Average.	Mean Variation	Per cent Variation		
Syllables	1st trial	0	73	45.05	13.7	30.42		
	2nd "	27	92	64.63	16.61	25.70		
	3rd "	39	100	80.60	11.89	14.74	18.39	10.43
	4th "	50	100	86.10	9.98	11.59		
	5th "	43	100	87.68	8.35	9.52		
Poem	1st trial	22	100	73.38	20.56	28.02		
	2nd "	55	100	90.83	7.92	8.72	14.15	
	3rd "	71	100	93.68	5.34	5.70		
Dates	1st trial	60	100	88.30	6.60	7.47		
	2nd "	92	100	98.60	2.70	2.74	5.11	
Technical terms	Four	75	100	96.25	4.34	4.51		
	Six	33	100	83.65	10.19	12.18	8.35	
Historical names	Six	75	100	89.33	5.48	6.13	6.13	
		SINGLE PRESENTATION (LEARNING).						
Visual	Historical names	19	69	46.68	9.09	19.47		
	Technical terms	19	69	44.55	10.98	24.65	20.90	19.67
	Non. syllables	25	69	40.74	7.57	18.58		
Auditory	Historical names	31	63	48.16	8.46	17.57		
	Technical terms	31	69	49.76	8.73	17.54	18.44	
	Non. syllables	25	69	44.68	9.02	20.19		

GROUP VARIATIONS. (LEARNING.)
(SUMMARIES.)

Presentation.		Group 1.	Group 2.	Group 3.
Visual		54%	39%	39%
Auditory		42	56	42
Average for single form		48	47.5	40.5
Multiple	Non. syllables	73	71	74
	Poem	87	88	81
	Dates	93	93	95
	Technical terms	90	88	93
	Historical names	90	89	89
Average for multiple form		86.6	85.8	86.4

RELEARNING TESTS (MULTIPLE PRESENTATION).

		Score. Low.	Score. High.	Total Average.	Mean Variation	Per cent Variation	Averages.	
Syllables	1st trial	20	100	69.05	19.74	28.59	22.65	12.34
	2nd "	46	100	82.71	13.81	16.70		
Poem	1st trial	61	100	88	6.55	7.44	5.77	
	2nd "	78	100	95.23	3.89	4.09		
Dates	1st trial	60	100	94.08	8.08	8.59	8.59	
	2nd "	83	100	98.50	2.53	r.o.		

ELEVEN DAY MEMORY TESTS (MULTIPLE PRESENTATION).

	Score. Low.	Score. High.	Total Average.	Mean Variation	Per cent Variation	Averages.
Syllables	0	73	27.26	15.68	57.52	62.46
Poem	0	51	25.00	13.82	55.28	
Dates	0	60	18.84	14.05	74.58	

Criticism of the Tests.

Referring now to the first tests with the nonsense syllables, it may be noted that the per cent of variability is very high for the first two trials. This is essentially due to the fact that such work was wholly new to many of the students, while others knew how to proceed to advantage from the beginning. The same may be said of the first trial with the poem. Since the variation from this cause gradually decreased throughout the ten series of tests, it is evident that the per cent of variability in the earlier tests was relatively too high, as compared with the one-form presentation tests which were the last tests given. The one-form presentation tests were given at the point of greatest advantage in this respect. It is noteworthy that there is no evidence of fatigue in the records, and there was none in the testing. The tests began at nine a. m., and interest increased as the tests progressed.

Again, it should be noted that whenever some of the students reach a score of 100 per cent, further testing on the same material is done with less possibility of variation. At two points in the learning tests (the last trial with the six dates, and the trial with the four technical terms) the possibility of variation is seriously crippled from this cause. It was at first thought advisable to rule out the scores of the two trials mentioned, but on figuring up averages it was found that the final conclusions would not be changed if the two tests were thrown out, and since they tend to counterbalance the high variation due to inexperience in the early tests, they have been allowed to stand.

The ruling out process was resorted to, however, in two instances, (1) since the poem proved so attractive to sixteen students (mainly in the auditory group) that they thought it over during vacation, their memory and relearning records were rejected. The students had no idea that the tests were to be repeated after the holidays, and extreme care was taken to find all who had gone over the material during vacation, by giving ready commendation to all such cases. The holiday period was chosen as a good time to check this tendency. (2) The last trial in relearning the dates was ruled out for the reason that the scores were nearly all perfect, hence but little chance for variation.

For the purpose of reaching conclusions as to the relation of the kind of presentation of subject matter to capacity, we may now bring together the main results from our two tables:

CONDENSED STATISTICS (VARIATIONS).
NORMAL SCHOOL SENIORS (64 STUDENTS).

Presentation.	Per cent Variation. (Total Average.)	Summaries.	Group Presentation.		
			Average.	Mean Variation	Per cent Variation
One-form	11.42	(56.5, 63, 65)	61.5	3.33	5.42
Two-form	8.02	(71.5, 70, 76)	72.5	2.33	3.22
Three-form	7.90	(69 15, 68.75, 67.52)	68.47	1.91	.64

EIGHTH GRADE STUDENTS (40).

Presentation.	Per cent Variation. (Total Average.)	Summaries.	Group Variation.		
			Average	Mean Variation	Per cent Variation
One-form	19.67	(48, 47.5, 40.5)	45.33	3.22	7.10
Three-form	10.43	(86.6, 85.8, 86.4)	86.3	.30	.35

In whatever way we look at the statistics of the foregoing tables, the one significant fact which is ever intruding is that a class of students shows far greater variation in ability under a one-form than under a two-fold form of presentation, and least of all under that form of presentation which combines the visual, auditory, and motor responses.

Here then are the facts which bear directly upon the subject of student ability, and hence throw light on the problem of grading and promotion.

Conclusions.

1. A visual, auditory, or motor presentation alone does not do justice to half the members of a class.
2. A presentation combining any two forms is better, other things being equal, than any one-form presentation, yet it does not do justice to something like one-third of the members of a class.
3. Nothing less than a presentation combining all three of the typical responses, visual, auditory, and motor, may be said to give adequate opportunities to all members of a class.

PART III. THE UNITY OF FORMAL AND DYNAMIC ASPECTS.

We are now in position to state more definitely what the phrase, "capacity of a student," really means; and then to carry that meaning over into the serious problem of grading and promotion.

The Capacity of a Student.

We have seen that there are two essential conditions to be realized in any act of teaching; namely, (1) the learner must have a stock of personal experiences sufficient to give meaning to the given subject matter; and (2) the subject matter must be presented in such a way as to call forth and utilize these personal experiences. The capacity of the student may therefore be characterized as his stock of available personal experiences, plus a favorable presentation. A failure to meet either of these two conditions may actually reduce the student's capacity to zero in any given attempt at learning.

These two conditions, therefore, must furnish us our cues to classification. If a student appears in a class whose work requires a stock of personal experiences beyond him, that student's outlook is essentially hopeless, and reclassification is imperative. So, too, if a student is found with a stock of working experiences beyond his class, he should be promoted. The first requisite, then, in classifying any student is that we have a reasonably good knowledge of his stock of personal experiences. Ten examination questions cannot elicit this essential. Indeed, no written examination can reveal it. Such methods may tell us something, but nothing less than close personal touch with the student can reveal what is needed. The question, "What grade can this child carry?" should give place to the more appropriate question, "How can this school best serve this child?" In brief, we have relied too much upon "system".

Since we aim to classify a student on the basis of his capacity, his stock of personal experiences alone is not an infallible guide. A student may have ample personal experiences, yet work may be presented in such a way as to fail to call out those experiences. We have all seen children who do poorly under one teacher, and well under another, and perhaps it was because their capacities to do the work as offered by the two teachers actually varied. We cannot get away from the fact that the student's capacity is partly determined by the teaching, and it is this element of capacity with which this study is specifically concerned. Before a student is branded as actually incompetent to carry his grade, then, we must know whether or not he has been given a favorable opportunity to respond. The proverbial "examination" sinks into a wretched assumption here, and a close, personal relationship with the student is again our hope. The fact is, the mere designation of the place where a lesson is to be found in a book *may* be sufficient opportunity for one student; while a most careful analysis of the lesson may be required by another.

All this goes to show that the proper classification of the student is a matter far less formal than our "systems" of grading and promotion indicate. Indeed the system is but an incidental thing in the real problem, and it is a hopeful fact that as time goes on we are learning more and more to sacrifice the system for the sake of the individual. "Systems of promotion need to be fitted to individual differences in capacity, to be made more flexible, rather than to be made easier for those who now fail."[6]

Our study of the interrelation of student capacity and the favorable presentation of subject matter brings out another very common error in teaching; namely, since the teacher commonly presents subject matter in a way suggested by her own ideational type, such a presentation is probably unsuited to something like two-thirds of her class. There is no question but that this widespread practice is responsible for an alarming per cent of student failures to carry grades; and thus the problems of demotion and elimination are closely related to bad teaching.

---

[6] Thorndike, THE PSYCHOLOGICAL CLINIC, Vol. III, pp. 256, 257.

Our profound respect for system has plunged us into still another bad practice. We have been so inclined to see the child from the standpoint of his grade, that we have actually been guilty of making him a kind of tentative specialist in the subject in which he seemed to have the least ability; that is, if he seemed to have the least ability in arithmetic, and the hignest ability in history, we have had him spend most of his time on arithmetic and the least amount of time on history, in order to make him "carry his grade". Now, this is nothing less than a worship of the grade, or system, and it is contrary to the child's best interests, and therefore to the real purpose of the school. We are now demanding that the student be advanced by the subject, rather than by the grade, for we have seen quite enough of the lockstep evils. As ex-President Eliot has said, "We have reaped now in the public school system all the benefits of system and uniformity, and it is high time to superinduce in the American schools the opposite benefits of flexibility and variety."

It is a hopeful and significant fact that the point system[7] of classification and promotion is now making its advent. Under this plan, however, a student should be permitted, if need be, to belong to several groups or grades at the same time. When he has gained the requisite number of points in history, he should be promoted in history, and so on, and not held back for a given number of points in each subject. His diploma should come with the required number of points. A student should move as rapidly in one subject as his ability permits, and as slowly in another subject as his capacity requires. We have begun to realize that there are no *sine qua non* subjects, for experience has shown us that individuals can and do succeed in spite of deficiencies in the old "essentials", or "three R's". Moreover, we have found that the individual may have a private road to any subject.

The fact is, broadly stated, we are living theoretically, at least, in the day of immanence. The "inner gift" is the sacred thing, and all our forces are being organized to the end of bringing out the best there is within. Education, religion, government, and all other influences, must ultimately free the ability, the potential good within. There is nothing now sacred where the inner man is not, and anything is sacred just in the degree that it receives the inner sanction. We shall hardly stop until this belief has become reality in our schools. Already a Münsterberg[8] can say, "No learning and no training of the human mind counts, if it does not find an emotional willingness," and school methods are rapidly being remolded to conform to the interests of the individual. Not uniformity, but variety of abilities is what we are now to seek. In brief, our most serious problem is to reach the individual.

---

[7] The Grading and Promotion of Pupils, *Ed. Rev.*, Vol. 40, pp 375-386.

All this points to the fact that the old lockstep evils are being remedied in a larger way than any system of grading and promotion can reveal; but the formal step, the "military drill" aspect of grading, is soon to disappear, and "system" is going to have its control very much limited. Systems we must have, but we want less obtrusive, less dominating, and more flexible systems. No system should longer be permitted to pervert the real purposes of the school, but any system may exist as an elastic and modest means of serving the needs of the individual.

General Summary and Conclusions.

By way of summary, we may state the following conclusions:

1. The vital thing in any case of grading or promotion is personal acquaintance with the ability of the student.

2. Student ability is not a fixed and unvarying quantity, but it may be characterized as the student's stock of available personal experiences, plus a favorable presentation of subject matter.

3. Inadequate experience with the real capacities of students, together with one-sided presentations of subject matter which are suggested by the teacher's own ideational type, is responsible for many school failures, and hence adds much weight to the already heavy problem of regrading.

4. A visual, auditory, or motor presentation alone does not do justice to half the members of an ordinary class; and nothing less than a presentation favoring all three of the typical modes of response may be safely relied upon in group teaching.

5. Too much emphasis is now placed upon system, and we are not guided enough by the needs of the individual students.

6. The lockstep systems, which classify by grades, should be superseded as far as possible by classification into homogeneous groups, varying from subject to subject, so that we may have

---

[8] "Psychology and the Teacher," p. 263.

less grade dominance and more respect for individual needs and capacities.

7. Classification and promotion should be made on the basis of personal acquaintance with the abilities and needs of the student in specific subjects, rather than on the basis of the formal examination covering any or all subjects.

BIBLIOGRAPHY.

1. Ayres:—Some Factors Affecting Grade Distribution, The Psy. Clin., Vol. II, pp. 121–133.
2. Ayres:—A Simple System for Discovering Some Factors Influencing Non-promotion, The Psy. Clin., Vol. IV, No. 7, Dec. 1910, pp. 189–192.
3. Ayres:—Irregular Attendance—A Cause of Retardation, The Psy. Clin., Vol. III, pp. 1–8.
4. Ayres:—Laggards in Our Schools; N. Y., Charities Pub. Com., 1909, p. 143.
5. Ayres:—The Money Cost of the Repeater, The Psy. Clin., Vol. III, pp. 49–57.
6. Arnold:—Classification and Educ. of Afflicted Children, The Psy. Clin., Vol. II, 180–191.
7. Bagley:—Classroom Management (Batavia System), pp. 214–224; N. Y. Macmillan & Co.
8. Barnard:—The Seattle Plan of Promotion and Classification, Com. of Ed. Report, 1898–99, pp. 335–341.
9. Blewett:—System of Grading Schools in St. Louis, *Ed. Rev.*, Vol. VIII, pp. 387–388.
10. Boone:—The Lockstep in the Public School, Proc. of N. E. A., 1903, pp 408–412.
11. Boykin:—Class Intervals in City Public Schools, Com. of Ed. Report, 1891, pp. 981–1011.
12. Bryan:—A Method for Determining the Extent and Causes of Retardation in a City School System, The Psy. Clin., Vol. I, 41–52.
13. Buchanan:—Grading and Promotion, Proc. of N. E. A., 1900, pp. 128–137.
14. Burk:—Promotion of Bright and Slow Pupils, *Ed. Rev.*, Vol. XIX, 296–302.
15. Classification and Promotion of Pupils, Com. of Educ. Report, 1892, pp. 601–636, and 1899, pp. 303–357.
16. City School Reports of Cambridge, Mass.; Portland, Oregon; Santa Barbara, Cal.; *et al.*
17. Cogswell:—The Cambridge Experiment, Proc. of N. E. A., 1894, pp. 333-342.
18. Cornman:—Size of Classes and School Progress, The Psy. Clin., Vol. III, pp. 206–212.
19. Cornman:—The Retardation of the Pupils of Five City School Systems, The Psy. Clin., Vol. I, pp. 245–257.
20. Dutton and Snedden:—Administration of Public Education in the U. S., page 341; N. Y., Macmillan & Co.
21. Falkner:—Elimination of Pupils from School, The Psy. Clin., Vol. II, pp. 255–275.
22. Falkner:—The Fundamental Expression of Retardation, The Psy. Clin., Vol. IV, No. 8, January, 1911, pp. 213–220.
23. Falkner:—Some Further Considerations upon the Retardation of the Pupils of Five City School Systems, The Psy. Clin., Vol. II, pp. 57–74.
24. Garber:—A Rational System of Classification and Promotion of Pupils in Elementary Schools, *Ed.* 27, 1906, 1907.
25. Gayler: Retardation and Elimination in Graded and Rural Schools, The Psy. Clin., Vol. IV, No. 2, April 1910, pp. 40–45.
26. Gayler:—A Further Study of Retardation in Illinois, The Psy. Clin., Vol. IV, No. 3, May, 1910, pp. 79–82.
27. Gilbert:—Gradation and Promotion of Pupils, *Ed. Found.*, Vol. IV, pp. 718–726.

28. GREENWOOD:—Shortening the Time in the Elementary School, *Ed. Rev.*, Vol. XXIV, pp. 384–390.
29. HARRIS:—Annual Report of the St. Louis Public Schools, 1871–2, pp. 81–82.
30. HARRIS:—The Development of the Short Interval System in St. Louis, Com. of Ed. Report, 1898–9, pp. 303–330.
31. HARTWELL:—Grading and Promotion of Pupils, *Ed. Rev.*, Vol. X, pp. 375–378.
32. HEILMAN:—The Need for Special Classes in the Public Schools, THE PSY. CLIN., Vol. I, pp. 104–114.
33. HUYSSON:—Gradation, Promotion, and Individual Instruction, *Ed. Found.*, Vol. XVIII, pp. 724–730.
34. JACKMAN:—The School Grade a Fiction, *Ed. Rev.*, Vol. XV, pp. 456–473.
35. JONES:—A Concrete Example of the Value of Individual Teaching, THE PSY. CLIN., Vol. II, pp. 196–203.
36. LANDAN:—Nervöse Schulkinder, 1902.
37. MILES:—A Comparison of Elementary and High School Grades, *Ped. Sem.*, Vol. XVII, 1910.
38. MILLER:—Progress and Retardation of a Baltimore Class, THE PSY. CLIN., Vol. III, pp. 136–140.
39. JOHNSON:—Irregular Attendance in the Primary Grades, THE PSY. CLIN., Vol. III, pp. 89–95.
40. MOSES:—Die Neuorganisation der Volksschule in Mannheim, *Zeitsch. für Schulgesundheitspflege*, Vol. XII, 1899.
41. MOSES:—Zur Entwicklung der Schulorganisation auf psychologischer Grundlage, *Paed.-psych. Studien*, Vol. IV, No. 2–3.
42. MOSES:—Schulhygienische Betrachtungen über Gliederung und Organisation der deutschen Volksschule, *Zeitsch. für Schulgesundheitspflege*, Vol. XV, 1902.
43. PARKINSON:—Promotion, Accelerated and Retarded, *Ed.*, 19, pp. 152–157.
44. PAYNE:—Elastic Grading, Com. of Educ. Report, 1899–1900, pp. 1376–1377.
45. PRINCE:—Some New England Plans of Grading and Promotion, Proc. of N. E. A., 1898, pp. 423–432.
46. PRINCE:—Grading and Promotion of Pupils, *Ed. Rev.*, Vol. XV, pp. 231–245, and Com. of Ed. Report, 1898–99, pp. 349–356.
47. RICHMAN:—A Successful Experiment in Promoting Pupils, *Ed. Rev.*, vol. XVIII, pp. 29.
48. RODEL:—Zur Frage der Organisation der Volksschule in Mannheim, 1899.
49. ROSIER:—The Graded School—Its Strength and its Weakness, *Rev. of Ed.*, Vol. VII, pp. 175–177.
50. RUSSELL:—Exceptional Children in School, *Ed. Rev.*, Vol. VI, pp. 431–442.
51. SEARCH:—Individual Teaching. The Pueblo Plan, *Ed. Rev.*, Vol. VII, 154–170.
52. SEARCH:—The Pueblo Plan of Individual Teaching, *Ed. Rev.*, Vol. VIII, pp. 84–85.
53. SHAW:—Grading and Promotion, Proc. of N. E. A., 1898, pp. 422–423.
54. SHEARER:—The Elizabeth Plan of Grading, Proc. of N. E. A., 1898, pp. 441–448; and Com. of Ed. Report, 1898–9, pp. 330–335.
55. SQUIRE:—Our Responsibility for Retardation, THE PSY. CLIN., Vol. IV, No. 2, Apr. 1910, pp. 46–53.
56. SICKINGER:—Zur Frage der Organisation der Volksschule in Mannheim, 1899.
57. SICKINGER:—Ein pädagogisches Gutachten Herbarts und der Mannheimer Schulorganisation, 1900.
58. SICKINGER:—Die Neuorganisation der Volksschule in Mannheim, 1899.
59. SICKINGER:—Jahresberichte der Städtischen Volksschule in Mannheim, 1900–1910.
60. SOLDAN:—Shortening the Period of Elementary Schooling, *Ed. Rev.*, Vol. XXV, pp. 168–181.
61. THORNDIKE:—The Elim. of Children from School, U. S. Bur. Ed. Bul. No. 4, 1907.
62. THORNDIKE:—Promotion, Retardation and Elimination, THE PSY. CLIN., Vol. III, pp. 232 and 255.
63. TWITMYER:—Clinical Studies of Retarded Children, THE PSY. CLIN., Vol. I, pp. 97–103.
64. VAN SICKLE:—The Plan of the North Side Schools of Denver, Proc. of

N. E. A., 1898, pp. 434–441, and Com. of Ed. Report, 1898–9, pp. 341–346.
65. Van Sickle:—Provision for Exceptional Children in Public Schools, The Psy. Clin., Vol. II, pp. 102–111.
66. Young:—Grading and Classification, Proc. of N. E. A., 1893, pp. 83–86.
67. Wagner:—Retardation and Elimination in the Schools of Mauch Chunk Township, The Psy. Clin., Vol. III, pp. 164–173.
68. White:—Promotion and Examination in Graded Schools, U. S. Bur. of Ed., Circular, 1891.
69. Witmer:—What is Meant by Retardation? The Psy. Clin., Vol. IV, No. 5, Oct., 1910, pp. 121–131.
70. Witmer:—Retardation through Neglect in Children of the Rich, The Psy. Clin., Vol. I, pp. 157–174.
71. Woodward:—When and Why Pupils Leave School, etc., Com. of Ed. Report, Vol. II, 1899–1900, pp. 1364–1374.

II. ON THE DYNAMIC ASPECT OF GRADING AND PROMOTION.

72. Abbott:—On the Analysis of the Factor of Recall in the Learning Process, *Psy. Rev. Mon.* 44, 1909, pp. 131–132.
73. Bell and Muckenhoupt:—A Comparison of Methods of Determination of Ideational Types, *Amer. Jour. Psy.*, Vol. XVII, 1906.
74. Bernstein and Bugdanoff:—Experimente über das Verhalten der Merkfähigkeit bei Schulkindern, *Beiträge zur Psychologie der Aussage*, Vol. II.
75. Betts:—The Distribution and Function of Mental Imagery, *Psy Bull.*, 1910.
76. Biervliet:—La Mémoire, Paris, 1893. (Amer. Jour. of Psy., Vol. VI.)
77. Boggs:—The Psychology of the Learning Process, *Jour. of Philos., Psy., and Scientific Methods*, Vol. IV, 1907.
78. Bourdon:—Influence de l'âge sur la mémoire immédiate, *Rev. of Philos.*, Vol. XXXVIII.
79. Brittain:—A Study in Imagination, *Ped. Sem.*, Vol. XIV, 1907.
80. Burnham:—Memory, Historically and Experimentally Considered, *Amer. Jour. of Psy.*, 1888–91.
81. Burt:—Experimental Tests of General Intelligence, *Brit. Jour. of Psychology*, Dec., 1909, pp. 94–177.
82. Calkins:—A Study of Immediate and of Delayed Recall of the Concrete and of the Verbal, *Psy. Rev.*, Vol. V., 1898.
83. Colvin:—Methods of Determining Ideational Types, *Psy. Rev. Bul.*, Vol. VI, 1909.
84. Colvin:—Ideational Types of School Children, *Ped. Sem.*, Vol. XVII, 1909.
85. Colvin and Meyer:—Methods of Determining Ideational Types, *Psy. Bul.*, Vol. VII, 1909.
86. Colvin and Meyer:—The Development of Imagination in School Children and the Relation between Ideational Types and the Retentivity of the material to the Various Sense Departments, *Psy. Mon.*, Vol. XVI, 1909.
87. Eckhardt:—Visuelle Erinnerungsbilder, *Zeitsch. für Exp. Pädagogik*, Vol. V, 1907.
88. Fernald:—Experimentation in Imagery, *Psy. Bul.*, Vol. VII, 1910.
89. Galton:—Statistics of Mental Imagery, *Mind*, Vol. V, 1890.
90. Hawkins:—Experiments on Memory Types, *Psy. Rev.*, Vol. IV, 1897.
91. Kirkpatrick:—An Experimental Study of Memory, *Psy. Rev.*, Vol. IV, 1894.
92. Kirkpatrick:—Studies in Development and Learning, *Psy. Bul.*, Vol. VI, 1909.
93. Kirkpatrick:—Mental Images, *Science*, Vol. XXII, 1893.
94. Largnier de Bancels:—Les méthodes de mémorisation, *L'Année Psych.*, Vol. VII, 1901.
95. Lay:—Mental Imagery, *Psy. Rev. Mon.*, Vol. II, No. 3, 1897.
96. MacDougal:—Recognition and Recall, *Jour. of Philos., Psy. and Scientific Methods*, Vol. I, 1907.
97. Meyerhardt:—Economical Learning, *Ped. Sem.*, Vol. XIII, 1906.
98. Meumann:—Die Experimentelle Pädagogik, Vol. I, 1905, p. 61.

99. MÜNSTERBERG:—Psychology and the Teacher, Appleton, 1909.
100. MÜNSTERBERG:—Studien zur Assoziationslehre, *Beiträge zur experimentellen Psychologie*, 1892, Heft 4.
101. SMITH:—On the Reading and Memorizing of Meaningless Syllables Presented at Irregular Intervals of Time, *Amer. Jour Psy.*, Vol. XVIII, 1907.
102. SWIFT AND SCHUYLER:—The Learning Process, *Psy. Bul.*, Vol. IV, 1907.
103. STETSON:—Types of Imagination, *Psy. Rev.*, Vol. III, 1896.
104. TITCHENER:—Manual of Experimental Psychology, N. Y., Macmillan & Co.
105. UFER:—Sinnestypen; Rein's Encyklopädisches Handbuch der Pädagogik, Langensalza, 1903–1910.
106. WHIPPLE:—Manual of Mental and Physical Tests, Warrick & York, Baltimore, Md.
107. WINCH:—The Function of Images, *Jour. of Philos.,Psy. and Sci. Meth.*, Vol. V, 1888–1891.
108. WINCH:—Immediate Memory in School Children, *Brit. Jour. of Psy.*, Vol. I, 1904.

A SCORE OF DIFFICULT BOYS.

By Ralph L. Johnson, M.A.

Girard College, Philadelphia, Pa.

During the half year ending January 31, 1911, there have been two groups of boys in a special class in Girard College, one group known as the "Retarded Class," the other as the "Delinquent Class." There were twenty-four boys in the Retarded Class and twenty-eight in the Delinquent Class. Retarded boys are those who have remained unduly long in a grade without promotion, the repeating having become quite noticeable. Delinquent boys are those who have been troublesome in class; their repeating may have accumulated through many grades.

To show that delinquent boys are incapacitated for work to the same degree as retarded boys, and to show that similar treatment will bring equally good results in both cases, I have made a study of ten typical cases from each group. The ten delinquent boys have repeated sixty-five half years while the retarded boys have repeated fifty-four half years. The latter offended only in lack of knowledge, while the former showed lack of self-control,—they were "wicked as well as weak."

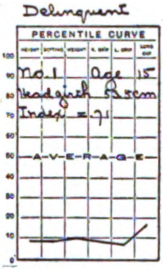
The pupils were measured and ranked according to the system originated by Professor Frank W. Smedley,[1] of Chicago, and explained by him as follows:—

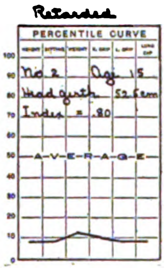
"Percentiles are obtained in the following manner: The individual cards on which the measurements were recorded when the child was tested were arranged according to the size of the pupils in each measurement, grouped separately for each age in years. The minimum measurement in each group gave the zero percentile for that group. To determine the ten percentile for that group, ten per cent of the number of cards were removed, beginning at the minimal end, and the highest measurement on the cards so removed was recorded as the desired percentile. Similarly the other percentiles were determined, the maximum measurement being recorded as the one hundred percentile."

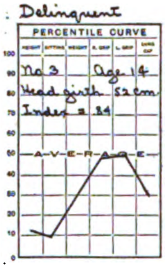
A comparison of the percentile groups to which the pupil belongs in the different measurements will give his balance in growth and development. To illustrate let us refer to chart No.

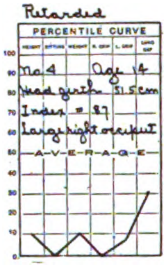
---

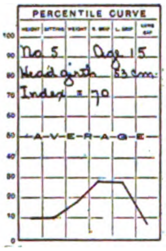
[1] Report of the [U. S.] Commissioner of Education for the year 1902, Vol. I, p. 1119.

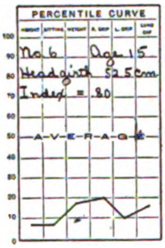

Delinquent
PERCENTILE CURVE
No. 1 Age 15
Headgirth 53.5cm
Index = .71
AVERAGE

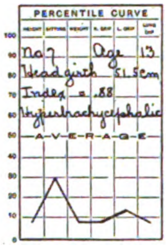

Retarded
PERCENTILE CURVE
No. 2 Age 15
Headgirth 52.5cm
Index = .80
AVERAGE

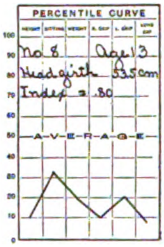

Delinquent
PERCENTILE CURVE
No. 3 Age 14
Head girth 52 cm.
Index = 84
AVERAGE

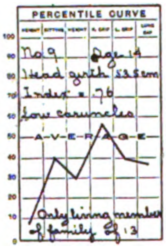

Retarded
PERCENTILE CURVE
No. 4 Age 14
Head girth 51.5cm
Index = 87
Large right occiput
AVERAGE

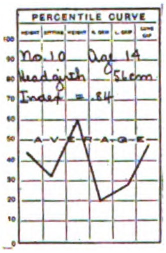

PERCENTILE CURVE
No. 5 Age 15
Headgirth 53cm.
Index = 70
AVERAGE

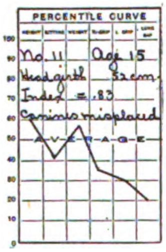

PERCENTILE CURVE
No. 6 Age 15
Headgirth 52.5cm
Index = .80
AVERAGE

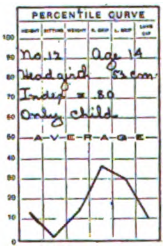

PERCENTILE CURVE
No. 7 Age 13
Headgirth 51.5cm
Index = .88
Hyperbrachycephalic
AVERAGE

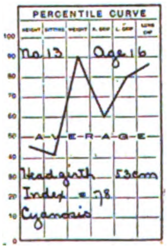

PERCENTILE CURVE
No. 8 Age 13
Headgirth 53.5cm
Index = .80
AVERAGE

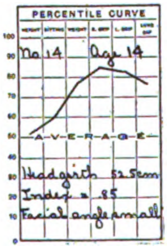

PERCENTILE CURVE
No. 9 Age 14
Head girth 53.5cm
Index = .76
Low caruncles
AVERAGE
Only living member of family of 13

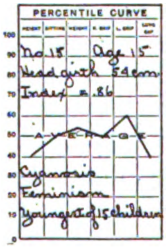

PERCENTILE CURVE
No. 10 Age 14
Headgirth 56cm
Index = .84
AVERAGE

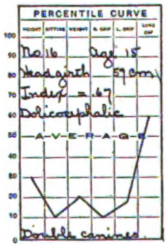

PERCENTILE CURVE
No. 11 Age 15
Headgirth 52cm.
Index = .83
Canines misplaced
AVERAGE

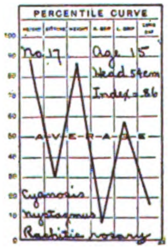

PERCENTILE CURVE
No. 12 Age 14
Headgirth 53cm.
Index = .80
Only child
AVERAGE

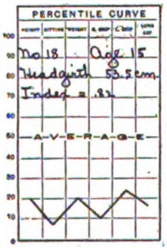

PERCENTILE CURVE
No. 13 Age 16
AVERAGE
Headgirth 53cm
Index = .78
Cyanosis

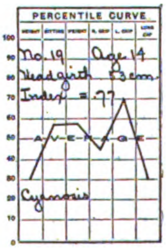

PERCENTILE CURVE
No. 14 Age 14
AVERAGE
Headgirth 52.5cm
Index = .85
Facial angle small

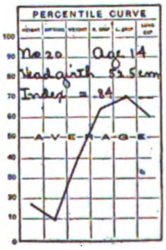

PERCENTILE CURVE
No. 15 Age 15
Headgirth 54cm.
Index = .86
AVERAGE
Cyanosis
Feminism
Youngest of 15 children


PERCENTILE CURVE
No. 16 Age 15
Headgirth 57cm.
Index = .67
Dolicocephalic
AVERAGE
Double canines


PERCENTILE CURVE
No. 17 Age 15
Head 54cm
Index = .86
AVERAGE
Cyanosis
Nystagmus
Rachitic rosary


PERCENTILE CURVE
No. 18 Age 15
Headgirth 53.5cm
Index = .82
AVERAGE


PERCENTILE CURVE
No. 19 Age 14
Headgirth 53cm.
Index = .77
AVERAGE
Cyanosis


PERCENTILE CURVE
No. 20 Age 14
Headgirth 52.5cm
Index = .84
AVERAGE

2. The retarded boy represented by this chart would stand about ninth from the minimal end of one hundred boys of age fifteen. His development is symmetrical. Boy No. 17 shows lack of balance. He is very tall when standing, but his trunk or soma is rather short. He is heavy but very weak in right hand prehension, his lung capacity is small. He writes with his right hand but uses a knife in his left.

The straighter the line, crossing from left to right, the more shapely will our student be. No. 2 is a small boy but the most uniform; while No. 11 is very weak in lung capacity. No. 17 and No. 11 have less lung capacity than the soma would suggest. "Lung capacity is the best criterion of the health and vigor of the child."[2] Eleven other boys have greater weight than one would expect; ten have shorter bodies than their height would properly need for symmetry. Eight delinquent boys and nine retarded boys have somata shorter than the average for their respective ages.

The small yet symmetrical boys do well as far as they go, but do not do much; they excel in technique but have little aptitude in applying acquired facts. The asymmetrical boys do memory work well but have no aptitude in applying acquired facts, they have skill in copying but have almost no skill in logical correlation. This conclusion is in general agreement with that of Dr. Sargent[3] who says, "A small man compactly built, with symmetrical proportions and a well balanced organism, can accomplish more than a larger man less solidly made with all parts wanting in symmetry and shapeliness. This law of adaptation and harmonious adjustment of parts prevails throughout the greater portion of the animal kingdom." According to Dr. Sargent's theory, Nos. 5, 6, 7, and 8, should be better students than Nos. 9, 10, 11, and 12, and this is borne out by the facts.

Dr. Wey[4] of Elmira Reformatory says, "The greatest physical delinquency and least resistance power is found in the respiratory apparatus." It is easily seen that nine delinquent boys have less than average lung capacity, and that seven retarded boys have less than that amount. If one cannot consume oxygen, one should not be expected to produce power. Of the delinquent boys five (50 per cent) had greater prehension in the left hand, and of the retarded boys six (60 per cent) had greater prehension in the left hand.

Since "right handedness must be a normal part of psychological development, not a phenomenon explicable by training,"[5] the above fact indicates a great misfortune. The handicap is about equal among both groups of five to six. Inasmuch as only 5 per cent of all persons have greater prehension in the left hand, while 50 per cent of delinquent or reform school inmates are more powerful in the grip of the left hand, the fact of lefthandedness becomes significant, and equally so as far as these two groups are concerned. "At any given age of school life bright or advanced pupils tend toward accentuated unidexterity and dull or backward pupils toward ambidexterity. Training in ambidexterty is training contrary to a law of child life."[6]

---

[2] John Mason Tyler, Growth and Education, p. 91.
[3] D. A. Sargent, *Scribner's Magazine*, Vol. XXII, 1887, p. 16.
[4] Havelock Ellis, The Criminal, p. 88.

No. 8, and No. 26 are ambidextrous. Their prehension is equal with right and left hands. This may, however, indicate merely that they have not passed puberty.

The average circumference of the heads, and the average for ages, corresponds quite well for the two groups. The delinquent boys have an average age of 14.6 years and the retarded boys have an average of 14.3 years. The average girth of heads of the former is 52.9 cm. and that of the latter 52.8. The average head of nine years has a girth of 54 cm. which means that the development of the head is as much behind the normal as the intelligence is below the standard; the average repetition of the delinquent amounts to 3.25 years and that of the retarded group 2.7 years.

"Experimental and clinical observation have very clearly shown that disturbances of the encephalon are capable of causing disturbances of intelligence."[7] "It appears that those cells which fail to react during the proper growing period of an animal have lost their opportunity for ever."[8] "The greater part of the growth of the brain takes place before any of the formal educational processes have begun, for the mild schooling that occurs before the age of seven or eight years can hardly have much influence."[9] "In these instances (microcephalics) the brain is not only of the small size indicated by the enclosing skull, but at the same time the skull is apt to be unusually thick, and either the brain does not fill it so completely as normally, or the enlargement of the cerebral ventricles by fluid causes the actual weight of the nerve substance to be smaller. . . . Furthermore the brain often contains a large proportion of undeveloped or degenerate tissue, and the encephalon may thus be of even less functional value than its small size would suggest. It thus appears that the essential anatomical feature in microcephalism is not so much the small size of the brain as its deficient construction, of which this small size can usually be taken as an index.[10]

---

[5] Helen Thompson Wooley, *Psychological Review*, Vol. XVII., p. 87.

[6] Fred W. Smedley, Report of [U. S.] Commissioner of Education for the year 1902, Vol. I., p. 1115.

[7] H. H. Donaldson, The Growth of the Brain, p. 85.

[8] *Ibid*, p. 87.

[9] *Ibid*, p. 107.

Only two of each group have heads equal to normal nine-year heads. The average retardation for the score of boys in head development is more than five years and the retardation in scholastic attainments is less than 3.25 years. Have they not done well? Have they not made bricks without straw?

The usual factors of adenoids and tonsils and teeth and attendance are negligible as far as it is possible to make them in an institution where every need of the pupil is cared for at once. The physician, the oculist, the dentist and the surgeon, keep the pupils at a high degree of efficiency. The hygienic routine of the school is admirable. Regular hours of sleep, of study and of recreation together with carefully made and thoroughly cleaned clothing, regular baths and scientifically prepared "good but plain" food—what child's health and instruction could be better provided for than a Girard College boy's?

Inasmuch as the incorrigible boys seemed so much like the dull boys, and their accumulated repetitions were more than equal to those of the other group, it was deemed proper to treat both grades in the same manner as regards discipline and instruction, in material as well as method.

In the annual report of the Juvenile Court of Kansas City, for 1908, it is stated that "fewer instances of delinquency are recorded for children who live with their father only, than those who live with their mother." The fathers of all these boys are dead. Again the "manifold evils of aggregation" always present in a large institution contribute another factor to the problem of disciplining this group of recalcitrants.

It at once became evident that unless discipline were to be the dominant feature, new ideals must be exhibited and new tasks must be organized. Believing that Nature puts the defective child in a class by himself and believing that education should take Nature's hint, many "special" devices were tried.

A statement made by the venerable sage, Dr. S. Weir Mitchell, that "the working hand makes strong the working brain," led to chair caning being done during school hours. The caning of chairs was well liked. It was interesting,—each boy felt an ownership in his work and considered it an affront to find another boy working at "his chair." It was looked upon as a trade, and many wished to know where the materials might be procured, declaring that mother's chairs should be renewed during vacation.

---

[10] *Ibid*, p. 125.

"The attempt to acquire skill is captivating and is a wholesome activity because it trains not only the hand and eye, but the moral nature as well."[11] The monotony not merely of school time but of after life, may be thus overcome. Jane Addams[12] says, "Dexterity of hand becomes all the more necessary, if the workman is to save his life at all." To test these opinions further and to give the pupil a closer relation with his surroundings it is intended to make brooms, and later perhaps rugs.

Furthermore since it is the child and not the curriculum that must be taught, much time and patience were given to find wherein lay the interest of the various students. A question asked in the *Pedagogical Seminary* for December, 1909, (page 435)—"Is it not time to throw the burdens we place upon young minds more upon the tactile and kinaesthetic perceptions and mental images which are older and more firmly established?"—found an affirmative answer. The statement of Kirkpatrick,[13] was true for these adolescent boys,—"It is now found that the old analytic logical methods are not only not the best for young children, but they are the worst possible, far worse than haphazard teaching, which leaves the child's mind free to work and develop in its own natural way."

For the application of these principles the subject matter was taken from Nature study, because it calls the child's mental powers into activity. It is also of much more value as a corrective, a recreational and an educational force than books alone. "By nature study is not meant teaching science, but scientific teaching."

That study might be made "attractive by artifice," live animals were used. At first a field tortoise was kept in the class room, then a hare, and afterward a bantam rooster. To complete the lesson about the live tortoise, an articulated tortoise of similar variety, having movable horny plates, was studied at the same time. The head was especially interesting, having the upper tooth-plate, the lower tooth-plate and the scalp-plate each segmented. The habits and habitat of the reptile were inquired into. Not a single technical name was spoken by any one. Each pupil had the privilege of handling and examining both specimens, the living and the articulated.

Some of the simpler experiments of physics and chemistry were demonstrated, all with good effect. A sand pendulum, used to describe Lissajou's figures, excited admiration for form and symmetry. Its marvelous habit of repeating the complex curves was not explained, and its relation to music only hinted at.

---

[11] George Mangold.—Child Problems. p. 288.
[12] Democracy and Social Ethics, p. 218.
[13] *Popular Science Monthly*, Vol. 77, p. 485.

A live rabbit was kept in the room for several weeks. The boys showed the greatest delight in feeding it. "First they loved it and then they fed it," as Reeder said about the children of Hastings and the chickens. The expected disorder was averted by their fear of the removal of the bunnie.

A final experiment was made with a bantam rooster, "Jerry." On the day of his arrival, a cage was constructed as if by magic, one boy knew where wire was to be found below a closed window grating, another had hinges and nails in his pocket, and in a few minutes our chicken had fine quarters.

His plumage was brilliant and his spirits proud, and so he became a favorite. He was loaned to eight other classes, but was always carried home, cage and all, to roost. Although he crowed from six to ten times a day, everybody seemed to be glad that he was there. He strengthened the school's *esprit du corps* and everybody felt responsible for his safety, as well as for his possible removal.

Story work often took the place of formal language work. Norse legends were of greatest usefulness. The beneficial effect came out also in the whittling work. Since every boy while orderly might whittle, most of them made weapons, swords, pistols, and cannons; these were generally made with left hands. How eagerly, I had almost said how well, the work was done! "There would be far more happiness and real success in mental hygiene, if more people would realize that at every step every person can do *something* well and take satisfaction in doing it, and that this satisfaction in something *done* is to be valued as ten times greater than the satisfaction taken in mere thought or imagination, however lofty."[14] What a godsend to thousands of broken and misfit lives such a message would have been if heard in time!

The results obtained by treating the delinquent boys in the same manner as the retarded boys warranted the assumption that they were nearly alike, moreover they supported the teaching of Seguin, who said, "The physiological education of the senses is the *royal* road to the education of the intellect; *experience,* the *mother of ideas.*" "Education of the *senses* must precede the *education of the mind.*" Finally, a very practical advantage of this method is that it makes discipline easier.

---

[14] Adolf Meyer. What do Histories of Cases of Insanity teach us concerning Preventive Mental Hygiene during the Years of School Life? THE PSYCHOLOGICAL CLINIC, Vol. II., No. 4, June 15, 1908.

REVIEWS AND CRITICISM.

Mental Discipline and Educational Values. By William Harry Heck, M.A., Professor of Education in the University of Virginia. New York: John Lane Company, 1911. 2d ed., pp. 208.

Professor Heck starts off boldly with the declaration,—"It is time that recent modifications of the honored doctrine of formal discipline should have more effect on our practice." He devotes his first chapter to an analysis of the chief problems of current pedagogy. Of these, the most difficult he considers, "the practical modification of courses and methods so as to gain from each and every part of each and every study its real, not to strive for its imagined disciplinary value." With so great an undertaking in hand, it is just as well that Mr. Heck puts himself on the safe side by adding, "The problems of mental discipline are too unsettled at present for anyone to be dogmatic or to attempt more than brief suggestions."

The author's secondary purpose is "to sum up and organize the discussions and experiments," and this he has done most ably. He remarks, "In class discussion of the doctrine of formal discipline, we have felt the need of such a symposium of opinions to put in the hands of students as a source-book for parallel reading." This need he has filled in a highly satisfactory manner.

His own contributions, naturally, are less satisfactory,—no more so, indeed, than he modestly predicts they will be. In his chapter on "Educational Values," he not only fails to establish a standard of "value," but even to make clear the sense in which he is using that word. After discussing the elementary curriculum, he concludes his final chapter on "The Secondary Curriculum" with the words, "The schools can become a vital, direct means of preparing boys and girls for environmental usefulness, especially if the school combines, simultaneously or successively, with the general course, such vocational training as will make its graduates independent economic factors in society." "Environmental usefulness" is an excellent phrase, though of vague import. If it mean earning a living, that is just what public high schools everywhere are more or less successfully preparing young people to do at the present day. It can become a worthy ideal for future progress in education, only if the meaning of "environment" be not too limited, and if "usefulness" be not restricted to efforts which yield an immediate financial return. Moreover, it is an accepted principle of modern psychology that man reaches his fullest development through the spontaneous, pleasurable activities called play. Mr. Heck has not taken play into account in his scheme of education, nor considered the disciplinary value of good sportsmanship, and this constitutes the weakness of his otherwise admirable and serviceable little handbook.

A. T.

NEWS AND COMMENT.

Educational Aspects of Christian Science—A Reply and a Rejoinder.

Boston, May 15, 1911.

Editor of The Psychological Clinic,
Philadelphia, Pa.

Dear Sir:

In your issue of the 15th [of April], there appeared an article by Charles Keen Taylor, in which the author makes certain allegations regarding the practice of Christian Science and describes the alleged conduct of a certain boys' school as an example, although he prepares us against accepting any adverse criticism by assuring us that the school was equipped "superior to that of other schools." He says "the dormitories were comfortable and excellent in every way, the table was beyond reproach, and the school building including class rooms entirely adequate." "The teaching no better anywhere." "The school had a fine gymnasium and gave quite a little time to athletics." He further declares "the faculty seemed to be an exceptionally able group of men." "They were all fond of their work and obviously fond of boys, taking great personal interest in their charges." He then assures us by implication that it was within the power of the non-Christian Science portion of the faculty to dictate the policy of the school, since there were "only three" Christian Scientists in the number and the rest "represented a variety of religious beliefs" and "any point concerning the boys could be discussed and settled by faculty vote, which the head master "never" vetoed, with the result that "everything was admirably managed and the actual work of the teachers was most effective."

After the foregoing description, which is unusually complimentary, Mr. Taylor contradicts himself and discredits the faculty whose voting and ruling majority he informs us did not believe in Christian Science by insinuating that in the school "physical deficiencies" were ignored. He declares there was "little care of the physical life of the boys except as regards the elemental needs of sleep, food, warmth, and to some degree at least, bodily cleanliness." The gentleman does not say here what "degree" of "bodily cleanliness" was maintained, but he has informed us that the dormitories were "excellent in *every way,*" a condition which could not exist except when "bodily cleanliness" was observed in a high "degree." Most people would think that with "sleep, food, warmth, cleanliness" and "athletics" the boys had about all the "material attention" they needed, and that they could well afford to devote the rest of their time to the mental and spiritual. It may be noted that the implications and insinuations of our critic as to what constitutes the logical outcome of Christian Science impressions are not proved by his example. Moreover after a careful examination of the facts, I find that the school referred to has met with unusual success in every line which makes for the advancement of the boy. Those who have patronized it speak in glowing terms of the excellent faculty connected therewith, of the increased interest in educational matters inculcated in the boys, and especially of the physical and moral advancement of the pupils. I find that, as in all boys' schools, there have been unfortunate occurrences and more or less necessity for discipline, but nothing at all unusual. I find that the school has been conducted with extreme care as to the bodily as well as the mental cleanliness of its inmates, and this is in keeping with Christian Science, since those who have become morally elevated naturally seek to improve their physical condition and environment, in accordance with the old adage, "Cleanliness is next to godliness." In many years' experience as a Christian Scientist, I have never known any individual, however good he may have been at the outset, who has not advanced both as to his moral and physical cleanliness through the influence of Christian Science. I have known families who have been lifted out of filth and degradation by the high ideals which have been instilled into them through the teaching of Christian Science. If Mr. Taylor knows anything whatever about Christian Scientists, he knows that they are quite as clean physically and morally as any other class.

Mr. Taylor declares that "moral perverts" were admitted to the school, owing to the fact that the applicants were not required to undergo physical examinations. Surely he is sufficiently well informed to know that physical examinations are utterly inadequate to the discovery of moral degeneracy, if not unnecessary thereto. It is a fundamental necessity of Christain Science practice that the lives and habits of children as well as adults shall be in strict keeping with the absolutely pure and good and true. Although Christian Scientists may have an understanding differing from some others as to the primary cause of physical disorders, they none the less recognized that it must be discovered, grappled with and overcome. Every Christian Science practitioner of wide experience has probably helped many a boy out of sin and imbecility after other available means had failed.

Mr. Taylor declares that his first acquaintance in the school was with a boy quite fifteen years old, from whom he learned confidentially that he was a victim of wrong doing, "probably owing to the fact that he had received no hint or warning concerning his body." He declares that he found other boys in the school in the same condition. Notwithstanding that he had commenced with the school year and his discoveries were made early in the season, according to his story, he made no report to the master of the school until after the Christmas holidays, and he declares that a "speedy examination followed," that "the entire faculty got together, the boys were called in one at a time and put through a grilling examination," and as soon as the bad conditions were known to the faculty measures were immediately taken to overcome them, and "the remedies were successful." He admits that he knew of the conditions and knew that the faculty courted criticism, but, like the boys, he kept his knowledge of existing vice a secret. It therefore appears that Mr. Taylor was the most blame-worthy person in the school, for he was older and "educated" in "physical deficiencies."

Here it should be noted that every school, however careful, has been caught with unworthy pupils, some of whom have required discipline, others of whom have required expulsion. The so-called "perverts" in this institution had been taken in under recommendation. Some of the boys were of parents who had only just learned of Christian Science, and whose boys had been reared, not according to the ideals of Christian Science, but without Christian Science. Hence their condition was not chargeable to Christian Scientists, and since such conditions are entirely beneath the practice of Christian Science they were due, not to Chistian Science, but to a want of it.

Mr. Taylor exonerates the school by informing us that one boy from the school was led astray by a college freshman. Perhaps a more careful examination would disclose the fact that others of the "perverts" had been led astray by boys outside the school. In any event, it is proper to state here that Christian Science recommends the uncovering of evil in the life and practice of the individual and a speedy elimination thereof. It is not contrary to the teaching of Christian Science that parents should investigate and inform themselves as to the moral and physical status of their children and give them whatever attention is required to lift them above that which is unlike God. Carelessness among Christian Scientists is no more due to Christian Science than is carelessness among other classes essentially due to their particular beliefs. It is just simply carelessness. If "Tommy," who is mentioned in our critic's story, had been a good consistent Christian Scientist, he would not have been a greedy boy. His unreasonable, intemperate indulgence of the "whole cocoanut" was not due to the fact that he made too little, but because he made too much of "the physical." A consistent Christian Scientist would be temperate and Godlike in all things.

In describing the purpose of the school under discussion, its head master writes that, "It is to develop the power to think accurately, quickly and deeply; to concentrate the attention, and to work faithfully and conscientiously without mental fatigue. To do this requires the development of the whole boy, the training of his moral sense, the bringing out of sound bodily vigor, and the exercise of his mental faculties. Control of the moral impulse, control of the body, control of the attention —these are the three desiderata that express the one purpose of education at this institution." It is but just to state that after an investigation we find that this school has fulfilled this mission in satisfactory measure.

When I consulted the master of this school as to what became of the boys who were in the school at the time of Mr. Taylor's sojourn there four years ago, he replied: "Regarding the first boy, who was 'lonely and melancholy,' it was his first year at the school and the second week of the year, so it is not strange if the school had not yet discovered the boy's habits. Mr. Taylor speaks of his work with this boy. The following are the facts: As Mr. Taylor declared, the boy was of a 'melancholy temperament,' he was easily discouraged and presumably morbid. Accordingly, Mr. Taylor proceeds to play upon the fears of this boy until he has him thoroughly scared. The boy sees before him the asylum, and pulmonary consumption. Under the influence of sheer terror, he improves his habits, takes regular physical exercises and increases his chest expansion an inch or so. But under Mr. Taylor's influence, he had become so morbid that the boy's father had to come East to find out the source of trouble. It was readily located, and the boy was taken from Mr. Taylor's influence. Morbid fear, however, continued to dominate him, and in a few months there had developed in him all the symptoms of serious lung trouble. At this point, Christian Science came to the rescue, a practitioner was called, and in three weeks the boy's fears had been overcome, and in five weeks a complete recovery had been effected, a recovery that is said to have proved permanent."

"Of the forty-one boys who were in the school during that year when Mr. Taylor was in the school, two were expelled as was related and a third was later sent away—not for any moral perversion, but for insubordination. One has proved to be in a measure mentally deficient. One, a fine, manly fellow, has passed away. This leaves thirty-six. Of these thirty-six, eight are now in other schools, three are still at school, five are successful business men. The 'big boy of seventeen', whom Mr. Taylor declares to have been 'the worst of the lot,' and concerning whom he says 'there could not be any hope outside of an institution, and not a great deal of hope even there,' and whose mentality 'was of such a grade that he was classed with the eleven year old boys, and was not their equal and was little more than an imbecile, to-day occupies a position requiring sound judgment and mental alertness with the largest automobile concern in the country. Another of these 'perverts' is a successful business man, superintendent of a large manufacturing concern. The third is a successful real estate agent, and the other two are doing well. Twenty of the boys who were in the school at that time passed successful examinations and were admitted to leading colleges of the land. Harvard received seven, Massachusetts Institute of Technology two, Princeton one, Dartmouth one, University of Wisconsin one, Leland Stanford one, Amherst one, University of Missouri one, University of Virginia one, Case School of Applied Science one, United States Naval Academy one, Valparaiso one, and last, but not of least consequence here, the University of Pennsylvania one. Puzzle: Find the 'moral perverts and imbeciles'." It is certain that if they ever existed they vanished in after years.

I find upon investigation that this school has in its employ a very able field secretary whose duty is to interview the parents of boys who seek admission to the school, to ascertain their character, and that he has oftentimes refused admission to boys because their standard of morals and mentality was out of keeping with the character of the school.

I find that not a single case of contagious disease of any serious nature has ever occurred in this school, that the school has never been closed a single day because of contagion or illness of any sort, and this speaks for the effectiveness of the particular measures adopted to safeguard the physical well-being of the pupils. As a matter of course, if a sick boy was treated by Christian Science, nothing was being done for the boy, from Mr. Taylor's point of view, since no regular physician was sent for, but the fact that the boy in every case speedily recovered should have some weight with him.

Mr. Taylor's story would give the impression that the assistant head master was indifferent to the moral well-being of the boys and ignorant of the conditions existing among them. But we are informed that the investigation which was made at the time showed that the senior master was much more closely in touch with the boys than any or all of his accusers, and that the conditions were not at all as had been represented. So conclusively was this shown, that the three accusers offered a written apology and retraction in the following words: "We are glad to retract the charges, *which were shown to be unfounded,* and heartily to apologize for having made them." I am told that this apology is now on file at the school. The head master declared to me: "It is but fair to say that as a result of this episode, more system was introduced in the method of ethical and moral instruction."

In conclusion, it may be well to call attention to the fact that Mr. Taylor did not need to enter a Christian Science school in order to discover trouble of the kind which he mentions. The *Ladies' Home Journal* of February 1, 1911, published the following statement: "Forty-one families—'nice families,' as we call them—were last May thrown into consternation and humilation by being privately notified by the head master of a boys' school that their boys could not be re-entered for another term at his school. 'A fearful condition of immorality,' wrote the head master, 'has been unearthed at the school, and in order to set an example to the rest of the boys, every boy concerned will be denied re-entrance to this school.' The 'fearful condition of immorality, discovered in this school was, as the head master privately explained traceable, as it generally is, 'to one boy,' the son of a 'careful' family of unquestioned standing in its community, and he had involved the other boys."

The school concerned in the foregoing statement was not a Christian Science school and none of the boys connected therewith were Christian Scientists. We call attention to the matter simply for the purpose of showing that Mr. Taylor's especial attack on the school which was conducted by a Christian Scientist is partial and unjust, wholly apart from his erroneous presumptions.

Yours truly,

(Signed) ALFRED FARLOW.

(NOTE.—Mr. Farlow is chairman of Committee on Publication, The First Church of Christ Scientist, Boston, Mass.)

PHILADELPHIA, May 20, 1911.

Editor of THE PSYCHOLOGICAL CLINIC.

DEAR SIR:—

Mr. Farlow's letter is interesting, but not as illuminating as I should wish. It is interesting because it attempts to disprove the criticism that the following-out of Christian Science precepts results in a lack of practical moral training for children, and it is unilluminating because it carefully avoids the point at issue, spending its space instead in a rather unsuccessful effort to discredit the writer of the article. However, any criticism from so high an authority as Mr. Farlow deserves careful consideration, so that I will take up the points in his letter as they appear.

Mr. Farlow says of me "He then assures us by implication that it was within the power of the non-Christian Science portion of the faculty to dictate the policy of the school" since the head master "never" vetoed a faculty vote. What was actually said was that I never knew the head master to use his veto power, though there is no doubt he would have done so in case of any action contrary to Christian Science principle, or against his own ideas of what was vitally necessary or right.

Mr. Farlow says "Mr. Taylor contradicts himself and discredits the faculty whose voting and ruling majority he informs us did not believe in Christian Science by insinuating that in the school 'physical deficiencies' were ignored." I would dislike very much to discredit any member of that faculty, and would be happy to have it pointed out to me wherein I did so, but that "physical deficiencies" were ignored is made rather stronger than an insinuation, for there *were* no physical examinations in the school. If a boy had some physical infirmity, he was not likely to mention it to anyone, because of the Christian Science opinion as to all physical infirmities. Besides this, the faculty was largely composed of new members, who were unacquainted with the boys and with Christian Science ideas, and so did not come to know of the real conditions among the boys for quite a while. Afterwards they did everything in their power to aid in creating a new order of things.

Because the bodies of the boys were never examined, as they are in most private schools, I stated that only to 'some degree' bodily cleanliness was looked after. The 'some degree' refers to such parts of the anatomy as are easily visible. Here Mr. Farlow seems to discover another 'contradiction,' for he argues that if the dormitories were "excellent in every way" then there must have been a high degree of bodily cleanliness among the boys. This logic is too elusive for the present writer, who unfortunately fails to see the connection. But in all this paragraph Mr. Farlow does not disprove the statement that physical defects among the boys were not noted, nor does he say anywhere that there was corrective work of any kind, nor does he deny the statement that there were no physical examinations whatsoever. This is the logical result of Christian Science teaching, which directs that as little be said as possible concerning the body or its defects. That this idea has many good points there is no doubt; the danger comes in carrying it to an extreme.

Mr. Farlow speaks of the commendations he has heard of the faculty of the school, and of the educational, physical and moral advancement of the boys sent there. This, of course, simply emphasizes what I said in the first article—I had nothing but the highest praise, not only for the faculty, but for the work accomplished by them, and indeed, after a practical system of moral training had been instituted, the training given in this school became one of the best in my experience. It may be that this practical method of training was quite contrary to Christian Science precepts, and its success among the boys is only another support of my contention—that the strict following out of these precepts does not make for practical moral training.

I should dislike very much to accuse Mr. Farlow of inaccuracy, but the following statement unfortunately points that way. He says "Mr. Taylor declares that 'moral perverts' were admitted to the school, owing to the fact that the applicants were not required to undergo physical examinations." What I actually said is this: that the admission of perverts and imbeciles was in keeping with the other fact mentioned a while ago, —the fact of there being no physical examinations." As, for the last three years, I have been an observer in a clinic to which have been brought great numbers of mentally defective children, I am only too well aware how often physical defects accompany mental or moral defects, but I would never say anything so ridiculous as what Mr. Farlow attributes to me—that is, that moral degeneracy could be discovered by means of physical examinations!

Mr. Farlow says "It is a fundamental necessity of Christian Science practice that the lives and habits of children as well as adults shall be in strict keeping with the absolutely pure and good and true." This idea, to be sure, is not original with Christian Science, but is the basis of all Christian religions, and of some not Christian. But again the great question is—what do the 'Scientists' do in order to train the children to acquire habits of the character mentioned? Do they, for instance, give the children any intelligible warnings concerning physical dangers? If so, I saw no evidence of it. When the reform came in the school, a large group of boys was assigned to the writer to receive practical instruction along such lines, and every boy told the same story—ignorance of the right kind of defensive knowledge that every child should have,—and some of these fellows were over eighteen years old.

At times I find Mr. Farlow difficult to follow. In his all too evident anxiety to disparage me Mr. Farlow has again allowed himself to draw erroneous conclusions from the original text. He says that the writer made his 'discoveries' 'early in the season,' and that until after the Christmas holidays he 'kept his knowledge of existing vice a secret' and that 'it therefore appears that Mr. Taylor was the most blame-worthy person in the school' etc., etc. If Mr. Farlow had read my article more attentively he would see that there were no particularly important "dis-

Fatigue and School Work.

In the *Zeitschrift fur Experimentelle Padagogik,* Band X, Hefte, 1-4, 1910, Mr. Max Oker-Blom reports his investigations conducted in the Volksschulen (public schools) of Helsingfors, upon fatigue during a school day. They consisted of the addition of twelve separate columns each containing ten single figures. Each column was to be added and the sum placed at the bottom. At the end of three minutes each pupil, upon the command "Halt," placed a line under the figure he was just adding. The experiment was carried on simultaneously in several classes, six times during each day's session. The results were as follows:

1. A time schedule which utilizes the hours from 8 to 11 and from 4 to 6 o'clock produces better results than a continuous schedule that utilizes the time from 11 until 4 o'clock.

2. During the early morning hours (8 to 11) the mental ability is less than later in the day (from 11 to 2). Even the late afternoon hours (4 to 6) are better for mental work than the early morning hours, provided a sufficiently long recreation period (five hours) intervenes.

3. There is a gradual rise in mental alertness during the morning, the second hour shows better results than the first, as also do the third and the fourth hours. The last (fifth) hour of an uninterrupted session shows a decreased ability in young children (10 to 11 years). This decrease is not shown during the fifth hour of an interrupted school day.

4. Studies demanding great mental effort should not, therefore, be placed in the first or in the last hour.

Investigating the effects upon mental alertness of a long walk to school the results were as follows:

5. A walk of 4/5 to 1 1/5 miles showed beneficial results. Children living in the immediate neighborhood of the school, and who did not, therefore, get this daily form of exercise, were easily fatigued by any extra exertion. It appears that a daily walk of one mile to and from school is of benefit to all pupils. Older pupils may walk one and a half miles without its affecting their mental alertness. Such pupils show a slight degree of fatigue during the first school hour, and with some this extends into the second hour. The symptoms of fatigue wear off, however, and then these pupils show an increased power of resisting mental as well as physical fatigue (brought about, undoubtedly, by their increased endurance and bodily vigor).

6. Marches of 1 4/5 to 2 1/5 miles to school are too severe for pupils. The fatigue caused by such marches shows its effect during all hours of the day.

The experiments did not offer an opportunity for rating the fatigue caused by different studies. The effect of a stimulating presentation of school subjects could, however, be seen; also the depressing effect of poorly taught subjects. The effects of over stimulation in any particular subject were clearly revealed by a slight fatigue during the next hour.

The results show clearly the necessity for teaching in a manner demanded by the mental attitude (*Geist und Gemut*) of the child, and for regulating not only the quantity of work, but also the hours for recreation, in order to secure a steadily increasing mental alertness combined with a maximum mental efficiency.—William A. Stecher.

The Psychological Clinic Classified Advertising Department

ADVERTISING RATES

Hotels and Resorts, Apartments, Summer Camps, Tours and Travel, Special Schools, Educational Institutions, twenty-five cents per agate line. Not less than four lines accepted. In calculating space required for an advertisement, count an average of six words to the line unless display type is desired. The first word of each advertisement is set in capital letters without additional charge. Other words may be set in capitals, if desired, at double rates. Special headings appropriate to the department may be arranged for upon application.

ORDERS AND COPY FOR CLASSIFIED ADVERTISEMENTS

must be received with remittance ten days before the month in which it is intended the advertisement shall first appear. Address Advertising Department, The Psychological Clinic, Thirty-sixth and Woodland Avenue, West Philadelphia.

MEDIA, PENNSYLVANIA

THE FARM SCHOOL

A Private School for Boys Requiring Individual Instruction or Discipline

Situated on a farm of fifty acres. Summer and winter sessions.

Limited to six boys. A systematic routine of school work, out door work, and play, insisted upon. Constant personal oversight.

Summer term in part, spent on Maine coast, where school work is still kept up, although the life is freer and rougher, with more time devoted to recreation.

Boys entered for whole or part of year. For particulars, address,

Phone: Media 144 y. H. C. PORTER, Ph.D., R. F. D. 3, Media, Pa.

PHYSICAL TRAINING FOR BOYS

A Book written specially for teachers in schools that have no gymnasium; containing many simple, effective exercises, fully illustrated.

By Charles K. Taylor.

Price 55 cents postpaid

For Sale by

STRAWBRIDGE & CLOTHIER

Philadelphia, Pa.

The

John C. Winston Co.

Commercial Printing of the highest standard only.

Educational, Literary and Scientific publications our specialty.

The Mechanical equipment is of the latest.

Printers

Publishers

Bookbinders

Best Material and Workmanship

1006-1016 Arch St., Philadelphia

Psychological Monographs

A SERIES OF EXPERIMENTAL STUDIES IN PSYCHOLOGY AND PEDAGOGY

EDITED BY
LIGHTNER WITMER
University of Pennsylvania

1. Spelling in Elementary School. An Experimental and Statistical Investigation. 1902. 98 pp. 16 figures in the text and an appendix of 26 tables. Price: cloth, $1.25; paper, $1.00.

   By Oliver P. Cornman, Ph. D., District Superintendent of Schools, Philadelphia.

   "Dr. Cornman has made an extensive investigation of the ability of school children in Philadelphia schools in the subject of spelling, and studied his results with such care that his work deserves special attention." Professor W. H. Burnham. *The Pedagogical Seminary*. Vol. VIII. No. 4, Dec., 1906, p. 491.

2. The Sensation of Pain and the Theory of the Specific Sense Energies. 1902. viii + 87 pp., with one table and two figures in the text. Price: paper, $1.00.

   By Anna J. McKeag, Ph. D., Professor of Pedagogy, Wellesley College.

   As a result of an experimental investigation of the reaction of a number of subjects to painful stimuli, the author first presents an analysis of the pain judgment, which is presented either as a general or unforced judgment, or as a judgment in which the subject is required to give expression to the perceived qualitative distinctness and discreteness of the sensation. The relation of pain and touch to various stimuli is given consideration. In an important chapter a resume of the history of the theory of the specific sense energies is given, with special reference to the sensation of pain, and an examination is made of the physiological basis of pain in the periphery and nerve centres.

3. The Application of Statistical Methods to the Problem of Psychophysics, 1908. 221 pp., including 94 tables. Price: paper, $2.50.

   By F. M. Urban, Ph. D., University of Pennsylvania, Philadelphia.

4. Two Experimental Studies of the Insane. I. The Train of Thought. II. Some Physiological Conditions accompanying States of Depression. 84 pp., 3 inserted tables. Price: paper, $1.00.

   By Clara Harrison Town, Ph. D., Resident Psychologist at Friends' Asylum for the Insane, Frankford, Philadelphia, Pa.

5. A Clinical Study of One Thousand Retarded Children in Camden, N. J.

   By J. D. Heilman, Ph. D., Professor of Psychology, State Normal School, Greeley, Colorado. 106 pp., including 23 tables. Price: paper, $1.00.

THE PSYCHOLOGICAL CLINIC PRESS
Woodland Ave. & 36th St. Philadelphia, Pa.

Psych (Rob)

VOL. V. NO. 5 OCTOBER 15, 1911

THE Psychological Clinic

For the normal development of every child

PSYCHOLOGY HYGIENE EDUCATION

Editor: LIGHTNER WITMER, Ph. D. University of Pennsylvania

CONTENTS

RETARDATION IN THE SCHOOLS OF PALO ALTO, CALIFORNIA. A STUDY OF PEDAGOGICAL LIFE HISTORIES, *I. D. Payne, assisted by Superintendent J. C. Templeton and the Teachers of Palo Alto* 139

RETARDATION IN THE SCHOOLS OF STOCKTON, CALIFORNIA. A STUDY OF 300 PEDAGOGICAL LIFE HISTORIES, *J. O. Gossett, Leland Stanford Junior University* 149

THE RENAISSANCE OF BOB, *Charles Keen Taylor,* Philadelphia, Pa. 158

REVIEWS AND CRITICISM: *The Individual in the Making,* E. A. Kirkpatrick 164

NEWS AND COMMENT: *Do the Elementary Schools serve Boys less than Girls?* 165

THE PSYCHOLOGICAL CLINIC PRESS
WOODLAND AVE. AND 36TH ST.
PHILADELPHIA, PA.

THE PSYCHOLOGICAL CLINIC

A Journal of Orthogenics

For the normal development of every child

PSYCHOLOGY HYGIENE EDUCATION

Subscription price, $1.50 per annum (nine numbers). Single numbers, 20 cents. Foreign subscription price, $1.75.

**Published monthly except July, August and September, by Lightner Witmer,
College Hall, Woodland Avenue and Thirty-sixth Street,
Philadelphia, Pa.**

We are sure that any one who sees The Psychological Clinic will subscribe, and if he once subscribes, he will renew his subscription year after year, as the vast majority of our readers are doing. Will you give your friends this opportunity?

To save us the trouble and expense of sending out bills for renewals, we make an offer which at the same time will be advantageous to our subscribers. The regular subscription price of The Psychological Clinic is $1.50. We will accept a two years' subscription for $2.50 (absolutely net) paid in advance; and three years' subscription for $3.50 (absolutely net). This will enable subscribers to the current volume to obtain The Psychological Clinic from the beginning and including the present volume for $6.00, a saving of one dollar and a half.

Send subscriptions and all communications to

THE PSYCHOLOGICAL CLINIC PRESS

Woodland Ave. & 36th St. Philadelphia, Pa.

The Psychological Clinic

Copyright, 1911, by Lightner Witmer, Editor.

Vol. V, No. 6. November 15, 1911.

CONGENITAL APHASIA.

By Clara Harrison Town, Ph.D.,

Resident Psychologist, Lincoln State School and Colony, Lincoln, Ill.

There is probably no subject in the whole field of psychiatry which can boast a larger literature than aphasia. To read only the most important contributions since the publication of Broca's theory in 1861, would be an Herculean task. Nevertheless, one variety of the condition, its congenital form, has, in the heat of controversy, been much neglected. Many a man well versed in the literature of aphasia and practically conversant with its adult varieties is so unfamiliar with this conception of a congenital form that its mention arouses a smile and brings forth the query—"How can there be a loss of memory for language before language is acquired?" This point of view seems at first to be the logical outcome of the familiar conception of aphasia as a partial or total loss of memory for language in any one or all of its forms, but this reasoning really contains a fallacy and the fallacy is a faulty conception of the meaning and scope of memory.

The process of memory is in reality a twofold one, it implies the ability to retain impressions and the ability to recall them. These processes are absolutely distinct, the first may be intact while recall is interfered with, though of course there can be no recall without an initial impressibility. In aphasia both of these powers are reduced within the sphere of language, there is a reduction in the power to recall words and also in the power of acquiring new ones. In an adult who has had much experience of language and formed a large vocabulary, aphasia betrays itself in an inability to understand or to recall or utter once familiar words; his daily occupation makes a constant demand upon his stock of already acquired verbal ideas, and little demand upon his ability to acquire new ones, therefore his loss of power to recall is strikingly evident and his loss of impressibility remains unnoticed. With a child, however, the conditions are quite different. When the powers of impressibility by language and recall of language are reduced or absent in a child so young that no language has yet been acquired, it is not the failure to reproduce which is most in evidence, but the failure to retain impressions. The child's most important concern is the acquisition of language; this is seriously interfered with and therefore the loss of impressibility is noticed rather than the loss of ability to recall. This condition is apt to be attributed, not to a language defect, but to general mental deficiency or to some sensory defect. The aphasic condition is identical in the adult and the child, but different phases are accentuated by the different requirements of the two stages of development. The absence of powers which we are not called upon to use may remain indefinitely unnoticed; a man often by a mere chance discovers the fact that he is color-blind or amusic after living for years in ignorance of the fact, and his friends may never be cognizant of his condition.

Aphasia then is an inability, total or partial, to understand or to use language in any one or all of its forms, such inability being independent of any other mental incapacity or of any deformity or disease affecting the organs of articulation. It is particularly necessary to bear in mind these qualifications when considering the aphasias of childhood, as some authors writing of the feebleminded call all mute idiotic children, who are not deaf, aphasics, their standpoint being the exact opposite of that of those mentioned above who are familiar only with the aphasias of adults. The qualifications are also theoretically important, for without them the conception of aphasia as essentially and primarily a disturbance of the function of language would be lost, and aphasia would simply be a language disturbance resulting secondarily from a more fundamental and far-reaching mental disorder. All similarity between the aphasias of childhood and those of adults would disappear. Binet writes on this subject, "A congenital aphasia implies a faulty development of the centers concerned with language, an atrophy severe enough to be clearly pathological in character and to present a contrast between the arrested development of the language centers and the much greater development of the other centers of the same brain. This is positively the only reasonable way in which the term can be used."

It seems rather remarkable that all the cases of aphasia which have been used as studies and made to serve as bases of the various theories of aphasia have been of the adult type, with the single exception of Broadbent's case of mixed sensory and motor type reported in 1872. The study of adult cases is especially difficult because aphasia in adults is the result of cerebral apoplexy, trauma, tumor or other pathological cause the effect of which is usually far reaching and can scarcely in any one case be proved to be positively limited to the language zone. In children, however, the condition exists as the result of faulty development and occasionally a case is discovered where there is apparently no mental deficiency apart from the language defect. Such a chance is given of studying the phenomena in isolation, as no adult case could ever present.

That congenital cases have not been utilized seems all the more remarkable when we find that they were noticed and reported as early as aphasia itself. Though the modern theories of aphasia date only from Broca's discoveries in 1861, the condition was recognized by many earlier writers. Gall, the first phrenologist, as early as 1828, in writing of memory, differentiates the process into distinct faculties, among them noting "word memory" and the "sense of spoken language" and describes these functions in diseased conditions, anticipating the "word-blindness" of Kussmaul and the "motor aphasia" of Broca. He goes still further and describes faulty speech memory in children, giving a clear clinical picture of that form of congenital aphasia, though not using the name. He notes no cases among children of defective verbal memory (word-blindness), but speaks as follows of speech memory: "There are many children from two to twelve and even fourteen years of age who do not speak to the same degree as other children, although they understand well and although they are far from being idiotic. In these cases the trouble lies not in the vocal organs, as the ignorant sometimes insist, and still less in the apathetic state of the subject. Such children on the contrary even show great physical vivacity. They not only skip about, but they pass from one idea to another with astonishing rapidity. If one holds them and pronounces a word in the ear they repeat it distinctly. It is difficult to make this experiment twice in succession and it is impossible to do so three times, which proves a general feebleness of the organs of the intellectual faculties. Sometimes, however, such subjects are able to express in writing their ideas and sentiments well enough to prove that their weakness in intellect is particularly relative to their faculty of speech. When these children are treated by a method of curative tonic, not given tasks too difficult or too long continued for their feeble faculties, as they grow older their cerebral parts acquire more consistence and their intellectual faculties develop little by little and they end by acquiring the faculty of speech and taking rank among reasonable persons."

The Irish Census of 1851 reported one hundred and thirty-one cases of dumbness unassociated with deafness or paralysis. Some of these were examined by Sir William Wild, who found no physical cause for their dumbness and found also a fair amount of intelligence.

Dr. Wilbur reports four cases which appear to be congenital. One, a boy of thirteen, mentally slow, spoke only a few words; he learned to read, then to write and finally to speak. One, a boy of eight, had no voluntary speech, but understood spoken words; he learned first to read and then to speak. The third boy, also eight years old, understood both spoken and written language, but never spoke voluntarily and could only repeat single words with difficulty. The fourth boy did not attempt to speak until nine years of age and at thirteen spoke only a word or two. He was taught to read, write and speak distinctly.

These earliest cases, about twenty-one in number, were all motor in character. Word-blindness in children does not appear to have been reported until 1872, when Broadbent described a congenital case which combined total word-blindness with very limited power of speech. The boy could copy print, but could not write so much as "yes" or "no" from dictation and could understand no written words. Attempts at dictation resulted in "balive" and "acbe" for *no,* "it" for *is* and "ke" for *card.* His spoken vocabulary consisted of "no," "e" for *yes,* "faver" for *father,* "move" for *mother,* and "dunno" for *don't know.* Other efforts at speech resulted in the one expression "keegerkruger," though there is a record that he did on one occasion succeed in forming a few short phrases. Broadbent writes: "The difficulty was obviously not articulatory, on the other hand the boy was not an idiot in any sense and was not speechless through a general deficiency of intelligence. He understood what was said to him and copied printed words and written characters, but had not apparently associated the written sign with verbal sound so as to understand written and printed words, though, curiously enough, he did this in the case of numbers. The failure seemed to me to consist in an absence of the faculty of mental rehearsal of phrases, he could not formulate volition in words, or as Dr. Hughings Jackson says, he could not propositionize." Dr. Bosworth McCready, in a paper read in 1909, cites forty-one cases reported in the literature since 1896 and adds another to the list. His case was complicated by a stutter, a fortunate stutter, for without it the boy would not have had the good fortune to meet Dr. McCready. This boy started school at six and experienced great difficulty in learning to read. At ten he was subjected to a severe fright which resulted in a stutter. He drifted from school to tutor until his twentieth year, when he consulted Dr. McCready about his stuttering. During the subsequent training, it transpired that he could not read without stuttering passages which he could repeat clearly after the doctor; such mistakes as the following were the rule: *words* called "wan," *at* = "an," *sober* = "soder," *remember* = "remain," *because* = "beauteous," *town* = "down," etc. He confessed later that he frequently stuttered over a word to hide his inability to recognize it. He wrote well from dictation, though a short time afterward he often found it impossible to read what he had produced.

Mr. Pringle Morgan's case published in 1896 was similar. The trouble here, however, was word-blindness uncomplicated by any motor speech difficulty. The boy, fourteen years of age, was bright, quick at games and in no way inferior to others of his age, except that he was unable to learn to read. After several years of schooling and special tutors, he could only with difficulty spell out words of one syllable. The following is an example of his manner of taking dictation: "Carefully winding the string around the peg," was written: "Calfuly winder the sturn rond the Pag."

In May, 1911, two cases were reported in the *British Medical Journal* by Eva McCall, who discovered them during a medical inspection of elementary schools. The first is a case of word-blindness. A boy of twelve has failed to learn to read in spite of individual instruction. He has quite average intelligence, talks readily, but is unable to spell or to read. He recognizes single letters and writes well from copy but nothing from dictation but his own name. The second is a case different in form from any so far mentioned; it is a case of word-deafness. To this child of eight spoken language means nothing. He pronounces words, though inaccurately, by watching the speaker's lips, but immediately forgets them. Voluntarily he makes no effort to speak. The child has good hearing for noises which immediately attract his attention, but he pays no attention when spoken to. He could easily be mistaken for a deaf child.

An interesting point brought out by Thomas, Fisher, Stephenson, Hinshelwood, Plate and Peters, is that the condition often occurs in several members of the same family. Thomas reports six cases in one family in two generations and two cases in another family; Fisher, two in different generations; Stephenson, a family in which three generations were affected; Hinshelwood, four brothers and some of their descendants; Plate, four cases in three generations of one family, and Peters, two cases in one family.

A thorough study of aphasic conditions is possible only in the course of a persistent and systematic attempt to develop the language function by instruction, in the adult a matter of re-education, in the child, one of education. The process of re-education is perhaps simpler, as in most adult aphasics a few language symbols are retained in some form and these serve as an opening wedge by which old associations may be revived. There are usually some very habitual verbal forms even in the realm most affected, which are either not lost or easily revived; for instance, in the course of re-educating an hemiplegic aphasic who had reached the stage when he could repeat spoken words and read correctly certain written ones on which he had been trained, though unable to speak voluntarily, when the word *pen* was presented, the man repeated "pen, pen," and added in a quick spasmodic way, "Pennsylvania Railroad". The word *good* brought from the same man, "good, good, good morning". In congenital cases no such habit combinations exist and all associations have to be built up by the method of instruction. Dr. Wyllie strongly recommends the oral method used in the training of deaf mutes for the mixed cases of mind blindness and mind deafness and inability to speak, and quite a number of reported cases have been successfully treated by this method. Dr. Hinshelwood recommends frequent short reading lessons for word blindness, while Dr. Wilbur reports that the majority of his dumb aphasic children learned to read before they learned to speak. Bastian suggests that the left hand be trained to write, aiming in this way to bring into activity the right hemisphere and gradually to produce a substitution of function, basing his method on the localization theory of Broca. Séguin also suggests this method. The method was used by Dr. McCready in conjunction with other training aimed to present word impression through every possible sensory approach at the same time. His pupil listened to words, looked at them, pronounced and traced them simultaneously, thus building up all possible verbal associations. Training was begun in March, 1909; when the paper was read in September, 1909, Dr. McCready was able to report, "His improvement has been most satisfactory. He can now read a page of ordinary printed matter composed of the more common words, almost as quickly as a person with normal visual memory, and is able to read for pleasure, a thing he was never able to do before." As so many methods were combined in the instruction of this case it is difficult to tell how much effect the training of the left hand really had. The whole question of localization is still, after a half century of debate and investigation, a matter of heated controversy, and Moutier's exhaustive treatise which appeared in 1908, weights the scales pretty heavily on the negative side. However, the particular value of the method of improving language ability through a training of the left hand may not depend at all upon any localization theories or upon functional substitution. It might still be valuable if Marie's statement, "L'aphasie est due à un trouble de l'intélligence générale et de l'intélligence spéciale de langage" proves to be the truth. Training of the left hand in the finer co-ordinations used in writing, necessarily causes additional activity in some portion of the brain and will therefore cause an increase in the sum total of brain activity and efficiency. This increase in activity might be correlated with a rise in "l'intélligence générale" and improvement ensue, without any functional substitution whatever.

Summing up we find that there are three quite distinct methods used for the education and re-education of aphasics. First, the oral method used with deaf mutes; second, the various methods used for impressing visual symbols and associating them with their auditory values; this includes all phonic and pictorial methods used in teaching reading and spelling, as well as practice in writing; third, the special training of the left hand in the finer co-ordinations limited in most people to the right hand movements. A combination of all these methods seems to give best and quickest results though the process is at best a long and tedious one. Four years were necessary to teach one of Bastian's pupils to speak. With most of the reported cases the time is not recorded.

There are at present in the State School and Colony at Lincoln, Ill., two most interesting cases of word-deafness, complicated by a slight degree of motor aphasia, one a boy of eight years, and one a girl of nine. The boy's condition is probably not a congenital one, but dates as early in life as the first week, when he had a serious illness accompanied by spasms (probably meningitis) which left him partially paralyzed on the left side. The paralysis disappeared during infancy. At sixteen months he contracted measles, which illness was followed by chorea, and at three years an attack of scarlet fever left an otitis media.

At present the boy is plump and well nourished. He is flat-footed, habitually turns his toes in, staggers and droops his head and right shoulder when he walks. He can, however, walk on a strip four inches wide, and when interested and in a hurry runs like a normal boy. There is no lack of co-ordination in either eye or hand movements.

In spite of all these physical handicaps the boy is very active physically and particularly alert mentally, giving no evidence of mental abnormality other than his failure to understand and make use of language. He substitutes for language a lively pantomime and is quick to grasp the meaning of all gestures. He investigates everything and is also quite inventive, using all articles which he can procure to carry out some ingenious scheme,—a couple of yard sticks he at once converted into a railroad track and the rails soon bore the burden of a train of box cars. While in the laboratory he became much interested in a piece of apparatus which if touched by a metal pointer, causes a bell to sound. He was greatly pleased to find that he could produce the sound and at once began searching for the bell which was hidden beneath the table. He soon localized the sound and discovered the bell and also noticed the dry cells which furnished the power. While his back was turned, the wires were disconnected. He frowned when he found that the sound of the bell did not follow his touch and at once began to search for the reason. He found the disconnected wires and held them out to me to be reconnected. On the following day he again came to the laboratory. One of the cells was then standing at the end of the long laboratory table as far as possible from the rest of the apparatus and entirely disconnected. He tried the pointer, failed to ring the bell and then did all he could to make me arrange things. I paid no attention whatever, so he began to investigate; he found the dry cell, placed it in position, connected the wires and then triumphantly rang the bell. In spite of such intelligence he talks but little and so rarely notices what is said by others that he is often considered deaf. That he is not deaf to noises, the above incident proves, and that he is not deaf to the ordinary tones of the human voice became equally evident during a test for articulation. He repeated every word which was uttered in an ordinary tone, not correctly, but in a way that clearly approximated the original. The letters p, b, t, d, m and n, he uses well, both as the initial and final sounds of words. F, th and ng, he makes an attempt to produce. He names the following thirty-six objects or their pictures at sight:

girl (dirl)
boy (baw)
rabbit
dog (dod)
horse (hosen)
water
boat (bo)
flag
spoon (poon) (used also for knife and fork)
can (ken)
monkey (monk)
automobile (automo)
button
buttonhook (button)
clock (dock)
bed
duck
match (ma)
bush
book
watermelon (water)
chicken (shicky)
all kinds of food (dinner)
bird (bïr)
shoe (hoo)
wagon
mamma
penny
flower (ower)
seeds (teeds)
bug (bu)
dollie
cup (water)
stocking (token)
fish (fin)
table (able)

The following twenty-four words he also uses voluntarily:

look
eat
yes
no
oh
foot
lie down
all gone
out
hang it
do
I won't
that ruler ('uler)
open
I can't
I tired
my hand
dropped.

This gives him a vocabulary of at least sixty words. He showed plainly by pantomime that he recognized and knew the use of forty-two other objects:

bird
gloves
ring
butterfly
apple
rocking chair
crackers
table
hand
knife
typewriter
collar button
umbrella
whisk
comb
pillow
shoe
scissors
lawn mower
glasses
hat
pen
violin
collar
gun
pipe
strawberry
watch
nail file
tooth brush
cap
bell
nut
drum
hammock
book
pencil
dynamometer
necktie
graphophone
hatpin
ball

In a normal child or an imbecile without special language defect, the auditory vocabulary always exceeds the spoken, but with this boy the opposite condition exists, and he gives no sign of understanding more than the following twelve words when spoken:

stocking
dog
baby
bird
tooth
horse
man
eyes
nose
mouth
ears
William

That he hears other words is proved by the fact that he repeats them; that he does not understand them, by his utter failure to comply with requests or point out objects. When several objects with which he is familiar were placed before him and he was told to hand one, he paid not the slightest attention to the request. When the request was illustrated by gesture, he at once began to hand things, but indiscriminately, matches for book, candle for cup, knife for pencil, etc.

In testing his intelligence by the Binet scale, which is part of the routine examination of all children admitted to the school, he passed all the tests up to and including those for children of six years which did not require the understanding of language, failing in all those whose meaning could not be conveyed by gesture. One six-year test is the performance of three commissions given simultaneously. These actions he at once performed when he had watched another do them first, proving that he could keep the three ideas in mind long enough to comply with directions.

That he has good visual form perception he demonstrated by his handling of the form board test. In this test ten blocks of different shapes exactly fit into ten corresponding holes in a board; the child is told to take all the blocks out and replace them. This he did accurately and without hesitation, depending entirely on recognition of similarity of form; he then took up a picture of a star which lay on the table, and placed it on the block of similar shape, touched two blocks which were somewhat alike in shape, nodding meaningly to me, and then touched two more which were also similar. After this he picked up a large letter, cut from paper, and hunted through a set of alphabet blocks until he found the same letter, when he placed the paper letter upon it. His stereognostic sense is good,—with eyes blindfolded he handled familiar objects and showed by gestures that he knew their use.

His color discrimination is also good,—he matched without difficulty red, blue, green, yellow, purple and orange. He is right handed and uses scissors effectively, cutting out of paper without aid or suggestion several simple figures.

To sum up, the foregoing description portrays a boy with an alert mind, quick to perceive visual stimuli of all kinds, quick to interpret uses of objects, to discover causes for events and to notice relations between objects; a boy with a retentive memory and the concentration necessary to hold directions for three actions in mind long enough to perform them. All these powers he has developed, although deprived of the aid most children derive from the constant talk of those about them. It is a truism that the brightest and liveliest children are those who are talked to and played with the most; but here is a boy, deaf to the meaning of practically all words, who has developed a remarkably good intelligence. Can one doubt that he is suffering from a mental defect limited to the language field, from a defect independent of any other mental deficiency whatsoever?

The little girl has a bad heredity, and her condition seems to be congenital. Her father, grandfather and one uncle drank heavily, and her father also uses tobacco to excess. Her parents were first cousins, and her mother was subjected to much worry and grief before the child's birth. She has had measles, whooping cough, mumps, chorea and otitis media, but never the slightest paralysis. She is a highly nervous child, unusually active and has splendid muscular control. She runs like a deer, and her history states that she climbs everywhere and loves to chase cattle. She uses her hands well, cuts well, and likes to scribble, using her left hand and producing remarkably regular lines of continuous scribble in imitation of a letter.

Though physically so active, she is mentally lazy and will not exert herself in the least until she finds there is no escape, when she settles down to the business in hand. She has an accurate eye for form, placing all the blocks in the form board without hesitancy in the second trial; a few errors in the first trial were the result of inattention. She matches colors perfectly. Her stereognostic sense could not be satisfactorily tested as she becomes much frightened and greatly excited when she is blindfolded, or her hands are hidden from her view. She is very sensitive to noises, noticing when any one passes in the hall and calling out to them in a loud voice sentences of which only a word or two are intelligible. Unlike the boy, she talks a good deal voluntarily; she uses many short phrases which she articulates quite plainly and names a few objects. The phrases comprise the following:

Get up.
Come on.
Don't want to.
No I won't.
That's a shoe.
Ain't that pretty.
A little baby.
Let's see.
That's mine.
She says.
She don't neither.
She's at the door.
Now wait.
She's out back.
What you did there?
Let me have it.
What is that?
Sit down.
Get down.
That's for water.

The objects or their pictures which she names are:

papa
picture
baby
shoe
pocket knife
necktie
scissors (skikers)
lady (yade)
bush
trees

She also uses the words, *yes* and *no, listen* ('isten) and *pretty* Altogether her intelligibly spoken vocabulary amounts to about sixty words. Besides these she uses much language which no one has been able to interpret. The only words which she gives evidence of understanding when spoken are *Etta* (her name) and *bed.* When asked to hand objects which she has named she nods her head, smiling pleasantly, and says "yes, yes," but does nothing. She did not understand when told to point to her eyes, nose, mouth and ears, nor when told to stand up. She, like William, performed the three simultaneously requested acts only when they were rehearsed for her.

REFERENCES.

BASTIAN, H. CHARLTON. Aphasia and Other Speech Defects, 1898. The Lumlean Lectures on Some Problems in Connection with Aphasia, *Lancet*, April 3, 10, 24, May 1, 1897.

BROADBENT, W. Cerebral Mechanism of Speech and Thought, *Med. Chir. Transactions*, Volume 55, p. 140, February, 1872.

GALL, F. T. Sur les fonctions de cerveau et sur celles de chacune de ses parties. Volume 5, pp. 39-40; Paris, 1825.

HINSHELWOOD, JAMES. Four Cases of Congenital Word-blindness in One Family. *British Medical Journal*, Nov. 2, 1907.

Letter, Word, and Mind-blindness, 1900.

Congenital Hereditary Word-blindness. *British Medical Journal*, March 18, 1911.

KUSSMAUL. Aphasia. Ziemssen's Cyclopedia, Volume 14.

McCALL, EVA. Two Cases of Congenital Aphasia in Children. *Brit. Med. Jour.*, May 13, 1911.

McCREADY, E. BOSWORTH. Congenital Word-blindness as a Cause of Backwardness in School Children. Report of a Case Associated with Stuttering (Bibliography). *Pennsylvania Med. Jour.*, January, 1910.

MORGAN W. PRINGLE. A Case of Congenital Word-blindness. *British Medical Jour.*, 1896, p. 1378-1379.

PLATE, E. Vier Fälle von kongenitaler Wortblindheit in einer Familie. *Münch, med. Woch.*, 1909, Volume 56, p. 1793-4.

PETERS. *Münch. med Woch.*, 1908, No. 2.

SEGUIN, E. A Statement of the Aphasic Question, together with a Report of Fifty Cases. *Quarterly Jour. of Psycho. Med.*, New York, 1868. Volume 2, pp. 74-179.

WILBUR, H. B. Aphasia. *American Journal of Insanity*, July, 1867, pp. 1-28.

WILD, SIR WILLIAM. Aural Surgery, 1853.

WYLLIE, J. The Disorders of Speech (reviews cases recorded by Bastian, Benedikt, Haddon, Hartman, Taylor, Uebermann, Waldenberg, and adds two new ones). Edinburgh, Oliver, 1894.

A SPEECH DEFECT CASE TREATED AT COLUMBIA UNIVERSITY.

By Alice C. Hinckley.

Thomas T. is the nine-year-old son of Irish parents. His father was a confirmed alcoholic for many years before his death from pneumonia last fall. His mother is a robust, energetic woman of emotional temperament, who supports her family by doing washing. During the summer she is caretaker of a residence on East Sixty-seventh Street, where living conditions are much more favorable than in the crowded section where the family spend the winter. Thomas has a brother and two sisters older than himself, all of whom speak distinctly. The younger of the girls, however, talked "baby-talk" until she entered school, and now she teases her brother by mimicking him.

He has attended a parochial school for three years, and was promoted in July to a grade equivalent to 5 A. He dislikes school, and never studies at home, but his teacher reports that he gets on easily with his class work. He likes athletic games, especially baseball, and his ambition is to become a professional player. He was a mouth breather; has bad teeth, a normal palate, and his left nostril is small. His tonsils were removed at St. Luke's Hospital in September, 1910. He is not subject to colds or catarrhal affections. The only disease he has had is measles. He becomes dizzy and has headache from swinging or over-exercise.

At the beginning of the course of training it was practically impossible for anyone outside of his immediate family and playmates to understand him. His thirteen-year-old sister accompanied him to the Clinic as interpreter. His speech was an infantile stammer, with the following defects and substitutions: *t* for *k* or *g*, *dw* for *gr*, *tw* for *kr*, *t* for *th*, *tw* for *thr*, *d* for *th*, *st* for *sk*, *n* for *ng*; *f* and *v* were doubtful, *s* uncertain with a lisp, and *h* totally absent. Words like *walk, walked, neck* and *next* ended with a little spasmodic catch in the throat.

He was put through careful auditory tests with watches, tuning forks, and the singing of scales alone and with the teacher for range or extent of discrimination. He was also tested for general observation and memory of what he had seen at given places, by visiting the school museum and garden, and so on. His hearing was normal, but he could recall very little that he had seen or done at school or anywhere else, and he knew practically nothing about the animal or plant life of the world. He seemed to possess average intelligence, but lacked training in observation, and had probably never distinguished the points of difference between his speech and that of others. He knew there was a difference, and that knowledge made him sensitive, shy, and uncommunicative. Suppressed expression had reacted on impression, with a resulting listlessness. The first change in his facial expression occurred in our second lesson, and was induced by my visit to his home.

The chief problem with this boy was to get him to regard me as one of his friends and talk to me freely, so that his difficulties might be located and furnish material for the lessons. School was not available as a topic, since it was uninteresting to him. His stock of ideas, so far as he disclosed them, centered around games, and boys, and streets, and "cops". A common store of interests and activities was necessary as a basis for conversation. We compared notes as to our favorite fairy stories; we took walks, visited the school museum, the school garden at intervals to watch the growth of plants, and Bronx Park, where we saw hay-making as well as the animals, and where he had his first ride on a pony. His initiative was stimulated by permission to show the garden to a boy who had not seen it, and I arrived in time to see him doing the honors, and to enjoy the walk with both of them.

There were two one-hour lessons each week. Each lesson was planned with some special point in view, with the purpose of affording him the satisfaction of making conscious improvement, and giving him something on which he could practice at home for the next lesson. His sister, who came with him for the first half of the term, was of great assistance, reminding him of things which he might have forgotten. She became, indeed, too helpful in interpreting his language, so he was asked to come alone, as soon as he could make himself understood. Every lesson included a refocalizing of the correct articulation of consonants for motor ideas, and a drill in attention through the use of this articulation in words, sentences, conversation, or reading. His incorrect habits were ignored as far as possible, since one sound did duty for many consonants.

S was easily learned by explanation and demonstration of the position of the tongue so that the breath might escape with the sound of escaping steam. The initial *k* was worked on in the same lesson and in the same way, the imitation in this case being of a dog with a bone in his throat. After ten minutes' practice on the sound, he said with effort *cup, cap, cop.* The words giving more trouble were *kin, come, came. Kin* was the most difficult of the words with initial *k.*

In the second lesson, after our introductory conversation, in which I made no comment on his language, he reviewed the old words, using them in sentences, and added successfully *come, came, kick, cake, coke, cook. Kin* and *coal* still gave trouble. The important point in this lesson was final *k.* There was some work on initial *cr* and final *cs,* but they were very imperfect.

In the third lesson he succeeded in all old words, including *kin, coal, coke,* and all single sounds of *k* and *g,* whether initial or final. We worked fully ten minutes on the *g,* which was more difficult than the *k,* and was learned by comparison with it. The sense of touch was combined with that of sight and hearing by having the pupil feel the articulation first in my throat and then in his own. There was some drill on *nk, ng, th, cr, gr, thr.* The *r* combinations were very difficult.

The fourth lesson was the most natural response he had given. He was pleased at his ability to say the words he had agreed to work on. He succeeded with conscious effort on *cr, gr, thr, nk, ng, sk.* The game element was used in building up a list of words with which to practice these sounds, and this list was added to from time to time: *cricket, cross, cry, cradle, creep, cruel, crow, crept, crop, grow, grip, greedy, grab, ground, grub, grumble, groom, three, throw, threw, thrice, thrill, thread, think, thank, monkey, sulky, bulky, worthy, skin, scat, skip, scold, escape, Scot, scum, school, sky, scowl, squeeze, scamper, scholar, skillful.* These were still so difficult that he agreed to work on them at home for the next lesson, and we adopted them as a permanent list. *H* was still unmanageable.

The fifth lesson consisted mainly of a story of his own choosing, prepared at home, to see how well he could use the sounds he had already learned. He was allowed to read freely, with one or two interruptions where the words were very obscure. A discussion of the story, rather than of his manner of reading it, followed, then a review, and drill on the words and expressions which had given trouble. These were marked for home practice and preparation for the next lesson. Twelve minutes' work by imitation was given to the elemental sounds involved in *sk, squ, nk, cr, gr, thr,* for the purpose of establishing motor images as a basis for habit. The first three were reproduced fairly well, but the *r* combinations presented a serious difficulty. *H* was still impossible.

In the sixth lesson he was given a quick review of all old sounds and a short drill on imperfect ones. He re-read the story of the previous lesson, in which the difficult places had been underscored and worked on at home. There was some improvement, but not much.

The main issue in this lesson was the letter *h;* and truly, "we met the enemy and it was ours." In previous lessons such mild means had been employed as panting, and quick breathing out. Laughing, ha! ha! is not one of his accomplishments. Although hard on the *h,* it presents an opportunity for testing the skill of the teacher in humanizing a child. His trouble lay in the inability to associate or unite this breath with the word. Now, a deep breathing exercise was given with exaggerated, forcible exhalation, further emphasized by the muscular movement of raising the shoulders with each inhalation and dropping them suddenly with the exhalation. Gradually these exhalations were given the sounds of *hŭ, hă, hĭ, hoe, hĕ, hă, hŏ, hum, hot, hip, home, head, hat.*

At the close of this exercise he was handed the following selection, written clearly in a semi-vertical hand, to call forth his reaction to the thought:

"Some little drops of water,
Whose home was in the sea,
To go upon a journey
Once happened to agree.
A cloud they had for a carriage,
Their horse a playful breeze;
And through the air and sunshine
They rode a while at ease.

"But, ah! there were so many
At last the carriage broke,
And to the ground came tumbling
These frightened little folk.
Then through the moss and grasses
They were compelled to roam,
Until a brooklet found them
And carried them all home."

Thomas read it through silently and stolidly, with no apparent idea of what it was all about. For lack of time to develop the idea of the poem, he was asked to read it aloud for the purpose of locating the difficult places, and after some explanation of the meaning of the words, he was permitted to take it home with him for study.

For the seventh lesson we reviewed old sounds and searched our memories for new words in which to use them. Thomas was drilled on *h,* with the use of it extended to longer words and sentences. He did good work while the sounds were in the focus of attention, but lapsed when he attempted to use them in conversation. We worked out the idea of the poem while standing at the window and using as a basis a large white cloud floating in the blue sky. His limited observation was shown in the fact that he did not know that water flows down a slope. He enjoyed the idea of the carriage breaking and letting the little folks fall out. He read it aloud, and then we read it together for inflection. He was told to memorize it.

The eighth lesson began with a test in the form of an unprepared reading exercise, in which he made fewer lapses than in any previous lesson. This led up to a drill on *walked* and *next,* which were exceedingly difficult combinations for him. He told the story of the poem and then recited it. Practically every difficult place was passed with reasonable clearness by my pantomiming the articulation as he came to it. Then he recited it alone, carefully and deliberately. Two additional repetitions of the same poem were obtained easily, by asking our class instructor and a member of the class, both of whom had heard him at his worst, and who came into the room separately, if they would not like to hear how much he had improved. The ruse was not even suspected by the participants.

At the ninth lesson stress was put on remembering the right sounds while he talked. The subject was some of the things he had done since I saw him last. He explained the games tip-on-the-back, leap-frog and baseball. Whenever he was not clear I asked him to repeat, and if necessary helped him with the pantomime. He used no final *s* sounds, so I said after him the words containing these sounds, and he repeated them correctly. Following this conversation was a ten-minute drill on *d, z, k, ks, g, thr.*

He gave a prepared reading lesson, in which he corrected his mistakes as I pointed to the word incorrectly pronounced. The memory poem showed improvement by less exaggerated articulation. The *h* was now inclined to attach itself to initial vowels where it was not wanted as in *at, on, up.* We selected and went over another poem, "Little Brown Hands."

Material for the tenth lesson was provided by our visit to Bronx Park the previous Saturday. The purpose of the lesson was to let him do the talking. He told of the fun he had watching the monkeys, why he rode the pony instead of the camel and why he did not care to ride both, and other interesting features of the day. He thanked me for giving him such a good time, and invited me to visit Central Park with him some day.

From this conversation we selected these words and drilled on them about fifteen minutes: *Bronx, monkeys, neck, necks, next, scold, scrap, screw, grew, throw, whose.* The sounds underscored were all difficult for him, and those doubly underscored he did not get completely. *H* gave no trouble. He took a list of words home with him for practice. The first memory poem was recited clearly enough without help. The only serious lapses were on final *s* and the *ge* in carriage. He read a prepared selection, and talked about another excursion we expected to have when school is out.

After some preliminary conversation in the eleventh lesson, there was a ten-minute drill on our list of words. Final *s* was mastered, as well as the double consonants with the exception of *r* combinations. The triple sounds were secured by separating them, as *nek-s-t, elec-t-ric, ek-s-cuse.* He recited the memory poem with more ease and expression; read two stanzas of the new one with special attention to final *s;* read a selection which was new to him and did it better than those he had studied.

This was our last lesson—he does not think of our excursions as lessons—so he suggested that we visit the garden once more. He called my attention to the things that had grown and the changes that had taken place since our first visit. Much to his regret, he found that the wheat bed had been cleared. His sister Mary had thrown away his head of wheat, the first he had ever seen, and he probably wanted another. There were no more lady-bugs and white butterflies. As we left, he told me he was taking home the faded tobacco flower and the onion seed-pod we had examined and talked about.

In this somewhat detailed account of the case, I have endeavored to show not only the progress in speech, but the development of observation and individuality, which, though retarded, responded promptly to suggestion and training. From a stolid, silent, apparently stupid child, he has become bright and active in his movements; he wishes to see things that he can talk about, and he enjoys talking about what he sees, because he no longer needs an interpreter.

Without a single remark from me on the subject of polite manners, he has taken on such courtesies as raising his hat, walking on the outer side of the sidewalk, assisting me on and off cars, buying the tickets, finding me a seat, getting information from the conductor when necessary, saying "Excuse me" at the proper time, and being generally considerate and thoughtful. It has come about so naturally as to suggest intuition, but is more likely to be the result of a quickened power of observation. The result is parallel to that of removing a plant from a cellar to its rightful share of sunshine.

THE BINET-SIMON MEASURING SCALE FOR INTELLIGENCE: SOME CRITICISMS AND SUGGESTIONS.

LEONARD P. AYRES, PH.D.,
Russell Sage Foundation.

In 1908, the French psychologists Binet and Simon published their second and most famous series of tests for the diagnosis of the grade of intelligence of children. This series, translated and adapted for American use by Goddard and Whipple, has won for itself widespread acceptance and increasing application by those interested in the education of exceptional children.

This widespread practical application has demonstrated that in various minor respects the tests, originally developed for use with French children, are ill adapted to the needs of Americans, and, as a result, many workers are at present engaged in trying out minor variations in the hope of improving the series. In other words, there is general agreement that the measuring instrument is based on correct principles, and constructed on the right plan, but that it needs minor adjustments to make it work smoothly under new conditions.

The object of this article is to present considerations which lead the writer to believe that what we must have is a new instrument rather than the readjustment of the old; a new instrument utilizing what is good in the old, but largely planned on different principles and constructed along new lines.

The Binet-Simon tests consist of a series of fifty-six tasks and questions adapted to the capabilities of normal children of from three to thirteen years of age, and their purpose is to provide a measuring scale whereby the intellectual performance of the child tested may be compared with that of the average normal child of the same age.

This arrangement of the tests on an age scale constitutes the feature of greatest value in the Binet-Simon series, and accounts for the enthusiastic reception accorded them immediately upon their publication. It enables the examiner to test a seven-year-old child, for example, and to discover that his mental development is two years in arrears if he is able to pass successfully only the tests assigned for children five years of age and younger. This method provides for the first time a definite and universally intelligible scale by which to measure the performance of the subject.

A general idea of the character of the tests for each year may be gained from the following table, which only roughly indicates the nature of the tasks and questions:

Three Years.

1. Where is your nose, eyes, mouth?
2. Repetition of sentences.
3. Repetition of numbers.
4. Describing pictures.
5. Name of family.

Four Years.

6. Sex of child.
7. Naming familiar objects.
8. Repetition of figures.
9. Comparison of lines.

Five Years.

10. Comparison of weights.
11. Copying square.
12. Making rectangle with divided card.
13. Counting four cents.

Six Years.

14. Indicating right hand, left ear.
15. Repetition of sentence.
16. Esthetic comparison.
17. Definition of objects.
18. Execution of triple order.
19. Own age.
20. Knowing morning and afternoon.

Seven Years.

21. Unfinished picture.
22. Number of fingers.
23. Writing from copy.
24. Copying a diamond.
25. Repetition of figures.
26. Description of pictures.
27. Counting thirteen cents.
28. Naming four common coins.

Eight Years.

29. Reading and report.
30. Counting money.
31. Naming four colors.
32. Counting backwards.
33. Writing from dictation.
34. Comparing objects from memory.

Nine Years.

35. Knowing the date, day, month, day of month, and year.
36. Reciting days of week.
37. Making change.
38. Definition of familiar objects.
39. Reading and report.
40. Arrangement of weights.

Ten Years.

41. Reciting months of year.
42. Naming nine pieces of money.
43. Sentence building.
44. Problem questions.

Eleven Years.

45. Detecting absurd statements.
46. Sentence building.
47. Naming sixty words in three minutes.
48. Defining abstract terms.
49. Sentence building.

Twelve Years.

50. Repetition of figures.
51. Rhymes.
52. Repetition of sentence.
53. Problem questions.

Thirteen Years.

54. Drawing from design cut in paper.
55. Describing figure made from reversed triangle.
56. Differences between abstract terms.

These tests are designed to measure native ability, not scholastic attainment. They aim to provide the investigator with an instrument which will enable him to form a trustworthy estimate of the child's capacity for adapting himself to his social environment, and so are designed with special reference to evaluating his judgment, good sense, initiative, and adaptability.

Their value as a measure of this kind of intellectual capacity depends on whether or not they really test the qualities they aim to test and with what degree of accuracy. It is the opinion of the writer that they may be greatly improved in both respects. His criticisms fall under six general heads:

I. The tests predominantly reflect the child's ability to use words fluently, and only in small measure his ability to do acts.

II. Five of them depend on the child's recent environmental experience.

III. Seven depend on his ability to read or write.

IV. Too great weight is given to tests of ability to repeat words and numbers.

V. Too great weight is given to "puzzle tests."

VI. Unreasonable emphasis is given to tests of ability to define abstract terms.

I. Talking vs. Doing.

The first and most serious criticism is that the ability predominantly measured by these tests is the child's ability to use words fluently, and that this gives a warped and partial measure of his real degree of intelligence. The keynote of this criticism is founded in the tests themselves, among the questions assigned for ten-year-old children, where the child is asked, "Why should you judge a person by what he does rather than by what he says?"

A correct answer to this question would be that we should judge a person by his acts rather than by his words, because his acts are accurate indicators of what he really is, whereas his words may have only the slightest relation to his real self. This principle is reflected in the proverbs and literature of every age, and of all peoples. It is so axiomatic that Binet and Simon have rightly assumed that it forms a part of the knowledge of every normal ten-year-old child. Nevertheless, by careful count, two-thirds of their tests are tests of the child's ability to use words, and only one-third indicate his ability to act. The assumption seems to be that native ability to do can be tested by testing the ability to use words about doing.

The fallacy of this assumption is acutely appreciated by the school superintendent who is forced to select principals and teachers on the basis of examinations, and then sadly observes the striking contrast between the way in which the candidates describe how they would teach and administer, and the way in which they actually succeed in teaching and administering. Federal, state and municipal officials, whose field and office forces are selected on the basis of examinations, are equally alive to similar common discrepancies between words and deeds.

The root of the fallacy is the fundamental fact that the motivating stimuli which shape one's actions in coping with a real problem in life are invariably multiple and complex, whereas those which determine his answer to a hypothetical question are simple, few, and different in quality.

An illustration of this may be secured by putting to a number of intelligent adults of demonstrated practical ability the questions assigned to ten-year-old children in the tests under consideration. One of these reads, "What ought one to do before taking part in an important affair?" The writer's experience in putting this question to business men is not encouraging. A few answers have been received ranging from "Take a bath," and, "Put on your best clothes," to "Take some money from the bank" and "Transfer your property to your wife"; but in general those questioned reply with energetic expressions of short and ugly words and emphatic protestations that the question is unanswerable.

Again, these problem-questions overlook the importance of habit and of the emotions in influencing action. The ten-year-old child or the adult of indifferent mental ability may have a ready answer to the questions "What is the thing to do if you find out that your house is on fire?" "What ought one to do when he has been struck by a playmate who did not do it on purpose?" and, "What would you do if you were punished when you did not deserve it?" But the child or adult who does just the right thing when he has been struck by another, discovers that his house is on fire, or suffers undeserved punishment, thereby demonstrates a quality and degree of native ability to which few indeed among us may hope to attain.

A still further objection is that the tests assume an agreement between verbal equality and real equality which seldom exists. The blood-curdling series of tests put to eleven-year-old children to discover their ability to detect absurdities well illustrates this defect. The statement:

"There was found in the park to-day the body of an unfortunate young girl, frightfully mutilated, and chopped into eighteen pieces. It is thought that she committed suicide." may well be a pleasant and entertaining narrative to a normal and somewhat phlegmatic child, but constitutes a serious nervous shock to his more sensitive companion. In the same statement read to both children there is verbal equality; in their psychical import there may be the most serious inequality.

II. Recent Environmental Experience.

Five tests depend in high degree on the child's recent environmental experiences. These are the tests relating to time and to money. Some of them are "doing" tests, and some of them "saying" ones. The assumption with regard to the "time" questions is that intelligent children, irrespective of school training, should be able to name the day of the week, the month, the day of the month, the year, etc. Experiment among business and professional men shows that they are frequently unable to supply these data off-hand unless the nature of their business requires constant reference to them. Probably every reader will recall that it requires only three or four days of a camping trip or an ocean voyage to lose track of the days of the week and the days of the month, and that a distinct shock is experienced when someone mentions the fact that "to-day is Sunday."

The writer recalls serving as a member of a Federal jury in the West Indies trying smuggling cases, in which the members of ocean-going trading sloops were the accused. In these cases it was proved beyond any question that these sloop captains were not only illiterate, but that they were absolutely ignorant of the names of the months, and did not keep track of the days of the week, with the exception of the Sundays. Nevertheless, these men were distinctly able and intelligent, spoke several languages, navigated dangerous waters, and carried cargoes of considerable value. In the writer's opinion, the ability to name off-hand the day of the week and of the month is governed almost entirely by daily work and very little by native ability.

A similar objection, but one probably less serious, arises in connection with those questions having to do with money and making change. These again are abilities largely governed by environment. The ability of a child of ten years to recognize and name at sight a quarter, fifty-cent piece, a five-dollar bill and a ten-dollar bill, depends not on native ability but rather on whether or not he is accustomed to see, have, handle or spend these pieces of money.

III. Ability to Read and Write.

Seven tests depend on the subject's ability to read and write, which commonly depends on the amount and kind of school experience he has had, and may be only slightly related to his native ability.

IV. Repetition of Words and Numbers.

The repetition of words and numbers has an even more remote relation to the ability to cope with the problems of life, and yet one-seventh of the tests are of this sort. The simpler of them can be successfully passed by a gifted parrot; the more difficult ones recently proved beyond the ability of a university professor tested by the writer.

V. Puzzle Tests.

Several of the tests seem best designated as "puzzle tests," and appear to have strikingly little relation to anything the normal person has to do in the ordinary day's work. Such a one is the demand that the eight-year-old child count backwards from twenty. Counting backwards is one of the rarest things most people are called to do, and yet the proposal has recently been seriously made that these present tests be "improved" by requiring the subject to recite the names of the months from December back to January instead of forward from January to December. To teach children to recite backwards lists of words that have a normal fixed order is educationally vicious. To include such a requirement in tests of intellectual ability is at least questionable.

Another "puzzle test" for thirteen-year-old children seems as foreign to everyday experience as the foregoing. It uses for material a visiting card cut along the diagonal and asks the child to describe the resulting shape if one of the triangles were turned about and placed so that its short leg was on the other hypotenuse and its right angle at the smaller of the two acute angles. So far the writer has failed to find any one able to describe the resulting shape.

VI. Abstract Terms.

Definitions of abstract terms and expressions of the difference between abstract words of similar sound but different meaning constitute the last class of tests to be here considered. The first objection to these is that philosophers are almost the only people who think in abstractions and the second objection is that words of peculiarly difficult character have been chosen. Let the reader himself try the eleven-year-old test which demands definitions of *Charity, Justice,* and *Goodness.* To pass he must give two good definitions. Then let him try the thirteen-year-old tests and tell the difference between

Pleasure and Honor
Evolution and Revolution
Event and Advent
Poverty and Misery
Pride and Pretension.

The third of these pairs is a good one to try on your friends. If not satisfied with their explanations recourse may be had to the Standard Dictionary where one will be rewarded by finding that an *advent* is the coming of an *event,* but just what the difference between them is remains undiscovered.

To sum up the case to this point: two-thirds of the Binet-Simon tests are tests of the child's ability to use words, and only one-third tests of his ability to do acts. Among the reasons why certain of the tests fall short of providing satisfactory criteria for the judging of native ability are the following:—

1. They overlook the fundamental difference between the multiple and complex stimuli which contribute to the motivating impulse in coping with real problems and the few simple ones entering as factors in answering questions or obeying commands.
2. The importance of the emotions and habit in influencing action is disregarded.
3. Real equality is attributed to verbal equality.
4. Ability to answer many of the questions depends on the child's daily environmental experiences which differ radically among different children.
5. Ability to meet the requirements of several of the tests depends directly on the excellence of the child's schooling.
6. Several tests depend on the mere ability to repeat words and numbers.
7. Counting backwards and solving puzzles constitute several tests.
8. Several tests turn on the ability to express in words comprehension of difficult, abstract terms.

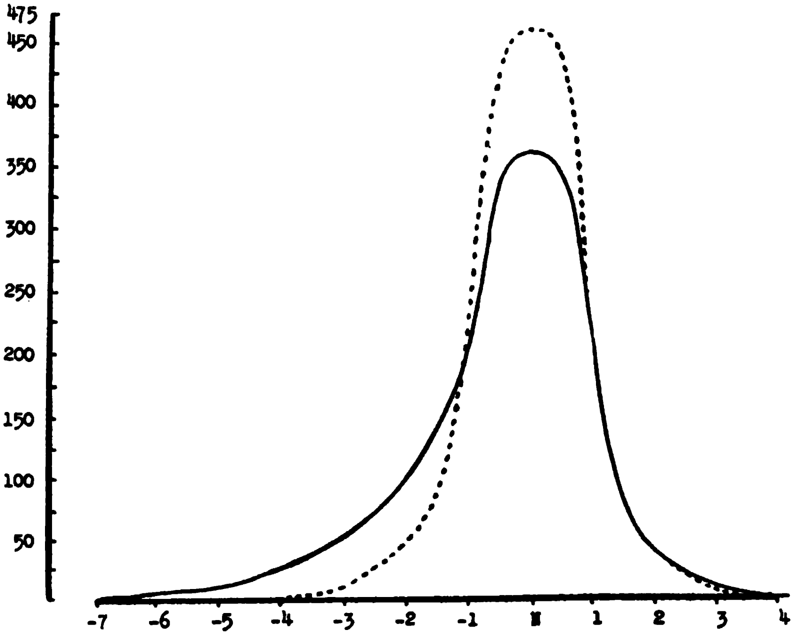
There are two important sets of evidence in favor of the tests and they are both good in the sense that they constitute "pragmatic" arguments showing that the tests "work" successfully when applied. In the first place these tests have won rapid and widespread use and endorsement among hundreds of practical teachers and workers with children, whereas all previous tests of intelligence have been practically restricted in use to workers in psychological laboratories.

In the writer's opinion the reason for this has been pointed out by Professor Terman, of Stanford University, who calls attention to the fact that here for the first time we have a set of tests arranged with reference to steps on a scale which is constant and universally understood. Everyone has a fairly accurate conception of what is meant when one says that a given child shows intelligence equal to that of a ten-year-old normal child. We have had graded tests before but no one knew what the steps on the scale meant in terms of anything else, or where the lower end began or how far the upper end reached. This application of tests to a definite, universally understood scale constitutes the great contribution of Binet and Simon and it is so important a contribution that its excellence outweighs the shortcomings of the tests themselves.

The second set of evidence consists of the records of applying the tests to large numbers of normal school children with the result that the distribution of the children into retarded, normal, and advanced groups corresponds fairly well with what is termed in statistics the normal frequency distribution. Such studies have been made by Binet and Simon in France with 203 normal children and by Goddard in this country with 1547 children. In both cases the results showed about such a distribution of retarded, normal and advanced children as the theory of normal frequency distribution tells us that we should find, and in both cases the results have been widely cited as constituting a scientific demonstration of the correctness of the tests in so far as their degree of difficulty is concerned.

Unfortunately this conclusion is hardly justified by the results of the investigations as made public, for the reason that we have only the mass figures for the entire group tested and not the figures showing the results for children of each age. This process hides the details from view and if, as many workers report, the tests for the youngest children are too easy and those for the oldest ones too hard, these important facts are concealed by putting all the results for all the ages together.

How this works is illustrated by comparing the results obtained by Goddard in his application of the Binet-Simon tests to 1547 normal school children with data recently gathered by the writer showing the progress of children in the public elementary schools of twenty-eight cities. In the accompanying diagram the solid line represents the distribution for the children tested by Goddard according as the tests showed them to be normal, one year behind, one year ahead, two years behind, two years ahead, etc. The dotted line is based on data showing how long it has taken 14,762 children in twenty-eight American cities to complete the work of seven grades. Those who have done so in seven years are rated as normal; those who have taken six years, as one year ahead in progress; those taking eight years, as one year behind, etc. To secure a proper basis of comparison both the Goddard data and the writer's have been reduced to relative figures and are presented on the basis of 1000 cases:—



Distribution curves showing variations from normal of 1547 children tested by Binet-Simon scale (solid line) and 14,762 children in 28 cities rated by their progress through seven grades (dotted line). Curves based on relative figures showing distribution of 1000 cases of each kind.

The significant feature of the diagram is that the curves are closely similar. If the solid curve constitutes a scientific demonstration of the correctness of the Binet tests, then it may fairly be argued that the dotted one constitutes a scientific demonstration that the public school systems and courses of study of these cities are correctly adjusted to the abilities of their pupils; neither too hard nor too easy, but almost exactly right. If this were true there would be far less need for securing a measuring scale of intelligence than there undoubtedly is, for in our public school system we should have just such a scale, scientifically correct and already at hand.

The fact is, however, that the progress figures from the twenty-eight cities referred to show great variations as between different grades and localities, and it is only by combining the figures for all the cities that the nearly normal curve shown is secured. A similar comparison could easily be made with the figures showing the results of the tests made by Binet and Simon in France. Indeed, it so happens that this curve almost exactly coincides with that showing the progress of the children in the eight grades of Bayonne, New Jersey, and here again the almost normal curve disappears when the data are presented by separate grades.

In presenting the foregoing considerations the writer does not wish to appear as an antagonist of the Binet-Simon Measuring Scale for Intelligence, for he is not. He does wish to sound a note of warning against accepting them in their present form as final and satisfactory. What is here set down is the result of his own attempts to discover ways in which they may be improved, together with ideas secured through lengthy discussions of their application with Mrs. Louise Stevens Bryant, of the Psychological Clinic of the University of Pennsylvania.

Binet and Simon have done a great and lasting service for the cause of childhood in basing their tests on a definite scale. The present situation offers a splendid opportunity to psychologists, teachers, and mothers to observe, discover, and record things which normal children do and know at each age. Work of this sort conducted by a large number of observers and co-ordinated by some central agency or agencies would soon give us a series of tests retaining all of the good of the present series and replacing present tests wherever experiment and observation show better ones can be found.

Above all let us steadfastly bear in mind that all measuring instruments must be judged for two qualities; first, what they measure, and, secondly, how accurately they measure it. The fact that the Binet-Simon tests are more or less accurately adjusted to the normal capabilities of the children of each age is only one, and the less important, criterion. The problem of paramount importance is whether or not they really measure native ability, and if they fall short, how we may develop a series of tests that will measure it.

REVIEWS AND CRITICISM.

Qualities of Men. By Joseph Jastrow. New York: Houghton, Mifflin & Co., 1911; pp. 183.

Dr. Jastrow has spared the critics their painstaking but generally inadequate explanation of the author's intentions by the following:

"The purpose of my ambitious venture is to survey the varieties of human qualities, and to do this dominantly in a practical vein, to gauge the measure and to note the manner of distinctive inequalities, to distinguish and portray their several influences on the careers of men; then more critically, to appraise their worth, to observe the success which attends them, and, if fortune favor, to reach some insight into the play of personal forces that shape our fate individually, collectively, nationally." If the author does not quite cover all this ground, the reader must remember that 183 small pages is scant room for such a large order.

Professor Jastrow lays great emphasis and with reason on the quality of sensibility, and contends that there are few callings demanding any high order or quality in which sensibility is not a vital factor. It is the lack of sensibilities which is largely responsible for ugliness, vulgarity, stupidities and immoralities. Dr. Jastrow believes that the "gentleman born" is likely to be more generously treated in this respect than the "common man," but he does little to prove his contention, what he says pointing rather to the advantages of environment than heredity.

He dwells on the superiority of the poietic or creative type, "men who can plan and foresee, and are not afraid to dream; men moved by principle as well as practice; men cherishing their individuality, not cowed by convention nor awed by power; men in whom the very nobility and worth of their theories enables them to meet adequately the conditions that confront them." He makes a strong plea for the safeguarding and encouragement of the poietic callings, and points out the potential influence of our colleges and universities in aiding or stifling poietic originality. He also believes that a deficient appreciation of this quality is a national trait, founded on national convictions and ideals.

Stress is laid on the importance of a community's ideals, inasmuch as the qualities selected or idealized are bound to become more and more prominent, while those which sink into disrepute gradually disappear, as shown, for instance, in the decline of the swooning, frail, tearful female of a past day and the rise of the athletic, confident, "even domineering young woman" of to-day.

We agree "that communities are judged by the qualities of the men they choose for their leaders," but is it true, I wonder, that "the purpose of Society is to utilize and encourage the aristocracy of capacity it commands"? It would be pleasant to think so, even though we had to confess the "purpose" amazingly befogged.

In the academic career Dr. Jastrow thinks that "the second-best qualities lead to preferment more rapidly than first-best ones, that the environment in which academic men are required to labor is not as stimulating as it might well be and that their activities are too much beset with uncongenial routine, too interferingly hampered by unappreciative control."

The remedy for this and for the other evils pointed out is to "vest larger directive authority in the hands of poietic men, particularly in callings that require special qualities of appreciation," not to "apply commercial standards to non-commercial pursuits," to "be patient with genius, respectful to dissent, responsive to reform, attentive to criticism, grateful to leadership, considerate of principle, and appreciative of quality." This is not *all* the remedy, but it is enough to give one pause. It reminds one vaguely of the preparatory oath for membership in the "King's Daughters." To some it may sound very Utopian and rather unattainable, but as a star to which to hitch the reformer's chariot, it seems sufficiently effulgent. Professor William James is quoted as saying that "though it is no small thing to inoculate seventy millions of people with new standards, yet, if there is to be any relief, that will have to be done." Professor Jastrow's virus, though it may lack the popularity to insure its reaching that number of persons, is eminently healthy and sound and likely to "take" wherever the injection is permitted.

The Psychological Clinic Classified Advertising Department

ADVERTISING RATES

Hotels and Resorts, Apartments, Summer Camps, Tours and Travel, Special Schools, Educational Institutions, twenty-five cents per agate line. Not less than four lines accepted. In calculating space required for an advertisement, count an average of six words to the line unless display type is desired. The first word of each advertisement is set in capital letters without additional charge. Other words may be set in capitals, if desired, at double rates. Special headings appropriate to the department may be arranged for upon application.

ORDERS AND COPY FOR CLASSIFIED ADVERTISEMENTS

must be received with remittance ten days before the month in which it is intended the advertisement shall first appear. Address ADVERTISING DEPARTMENT, THE PSYCHOLOGICAL CLINIC, Thirty-sixth and Woodland Avenue, West Philadelphia.

MEDIA, PENNSYLVANIA

THE FARM SCHOOL

A Private School for Boys Requiring Individual Instruction or Discipline

Situated on a farm of fifty acres. Summer and winter sessions.
Limited to six boys. A systematic routine of school work, out door work, and play, insisted upon. Constant personal oversight.
Summer term in part, spent on Maine coast, where school work is still kept up, although the life is freer and rougher, with more time devoted to recreation.
Boys entered for whole or part of year. For particulars, address,
Phone: Media 144 y. H. C. PORTER, Ph.D., R. F. D. 3, Media, Pa.

PHYSICAL TRAINING FOR BOYS

A Book written specially for teachers in schools that have no gymnasium; containing many simple, effective exercises, fully illustrated.

By CHARLES K. TAYLOR.

Price 35 cents postpaid

FOR SALE BY

STRAWBRIDGE & CLOTHIER
Philadelphia, Pa.

The

John C. Winston Co.

Commercial Printing of the highest standard only.

Educational, Literary and Scientific publications our specialty.

The Mechanical equipment is of the latest.

Printers
Publishers
Bookbinders

Best Material and Workmanship

1006-1016 Arch St., Philadelphia

Psychological Monographs

A SERIES OF EXPERIMENTAL STUDIES IN PSYCHOLOGY AND PEDAGOGY

EDITED BY
LIGHTNER WITMER
University of Pennsylvania

1. Spelling in the Elementary School. An Experimental and Statistical Investigation. 1902. 98 pp. 16 figures in the text and an appendix of 26 tables. Price: cloth, $1.25; paper, $1.00.
   By Oliver P. Cornman, Ph. D., District Superintendent of Schools, Philadelphia.

   "Dr. Cornman has made an extensive investigation of the ability of school children in Philadelphia schools in the subject of spelling, and studied his results with such care that his work deserves special attention." Professor W. H. Burnham. *The Pedagogical Seminary*. Vol. VIII. No. 4, Dec., 1906, p. 491.

2. The Sensation of Pain and the Theory of the Specific Sense Energies. 1902. viii + 87 pp., with one table and two figures in the text. Price: paper, $1.00.
   By Anna J. McKeag, Ph. D., Professor of Pedagogy, Wellesley College.

   As a result of an experimental investigation of the reaction of a number of subjects to painful stimuli, the author first presents an analysis of the pain judgment, which is presented either as a general or unforced judgment, or as a judgment in which the subject is required to give expression to the perceived qualitative distinctness and discreteness of the sensation. The relation of pain and touch to various stimuli is given consideration. In an important chapter a resume of the history of the theory of the specific sense energies is given, with special reference to the sensation of pain, and an examination is made of the physiological basis of pain in the periphery and nerve centres.

3. The Application of Statistical Methods to the Problem of Psychophysics, 1908. 221 pp., including 94 tables. Price: paper, $2.50.
   By F. M. Urban, Ph. D., University of Pennsylvania, Philadelphia.

4. Two Experimental Studies of the Insane. I. The Train of Thought. II. Some Physiological Conditions accompanying States of Depression. 84 pp., 3 inserted tables. Price: paper, $1.00.
   By Clara Harrison Town, Ph. D., Resident Psychologist at Friends' Asylum for the Insane, Frankford, Philadelphia, Pa.

5. A Clinical Study of One Thousand Retarded Children in Camden, N. J.
   By J. D. Heilman, Ph. D., Professor of Psychology, State Normal School, Greeley, Colorado. 106 pp., including 23 tables. Price: paper. $1.00.

6. Extent and Causes of Retardation in the Reading (Pa.) Public Schools in December, 1910. A Statistical Study.
   By Aaron Moyer Snyder, Ph.D. 72 pp., including 44 tables, and 14 figures in the text. Price: paper, $1.00.

THE PSYCHOLOGICAL CLINIC PRESS
Woodland Ave. & 36th St. Philadelphia, Pa.

Psych. Cl[illegible]

VOL. V. NO. 7 DECEMBER 15, 1911

THE Psychological Clinic

For the normal development of every child

PSYCHOLOGY HYGIENE EDUCATION

Editor: LIGHTNER WITMER, Ph. D., University of Pennsylvania

CONTENTS

SYMPOSIUM ON THE BINET TESTS.

THE BINET-SIMON SCALE FOR MEASURING INTELLIGENCE; IMPRESSIONS GAINED BY ITS APPLICATION, *Lewis M. Terman, Ph.D., Stanford University, California* 199

A STUDY OF THE BINET DEFINITION TESTS, *Isabel Lawrence, State Normal School, St. Cloud, Minn.* 207

A PRACTICAL GUIDE FOR THE ADMINISTRATION OF THE BINET-SIMON SCALE FOR MEASURING INTELLIGENCE, *J. E. Wallace Wallin, Ph.D., Stanton, Iowa* 217

THE PSYCHOLOGICAL CLINIC PRESS
WOODLAND AVE. AND 36TH ST.
PHILADELPHIA, PA.

THE PSYCHOLOGICAL CLINIC

A Journal of Orthogenics

For the normal development of every child

PSYCHOLOGY HYGIENE EDUCATION

Subscription price, $1.50 per annum (nine numbers). Single numbers, 20 cents. Foreign subscription price, $1.75.

**Published monthly except July, August and September, by Lightner Witmer,
College Hall, Woodland Avenue and Thirty-sixth Street,
Philadelphia, Pa.**

We are sure that any one who sees The Psychological Clinic will subscribe, and if he once subscribes, he will renew his subscription year after year, as the vast majority of our readers are doing. Will you give your friends this opportunity?

To save us the trouble and expense of sending out bills for renewals, we make an offer which at the same time will be advantageous to our subscribers. The regular subscription price of The Psychological Clinic is $1.50. We will accept a two years' subscription for $2.50 (absolutely net) paid in advance; and three years' subscription for $3.50 (absolutely net). This will enable subscribers to the current volume to obtain The Psychological Clinic from the beginning and including the present volume for $6.00, a saving of one dollar and a half.

Send subscriptions and all communications to

THE PSYCHOLOGICAL CLINIC PRESS

Woodland Ave. & 36th St. Philadelphia, Pa.

The Psychological Clinic

Copyright, 1911, by Lightner Witmer, Editor.

Vol. V, No. 7. December 15, 1911.

THE BINET-SIMON SCALE FOR MEASURING INTELLIGENCE.[1]

Impressions Gained by its Application upon Four Hundred Non-selected Children.

BY LEWIS M. TERMAN, PH.D.
Stanford University, California.

Through the assistance of Mr. H. G. Childs, a graduate student in the Department of Education, Stanford University, the Binet-Simon scale was tried last year upon about four hundred children in the vicinity of Stanford University. The complete account of this work will not appear until a little later (a series of articles by Terman and Childs) but on invitation of the editor of THE CLINIC I am glad to contribute to this symposium a few impressions gained from the work, and to add some criticisms of the scale.

For the authors of the study by far the most important result was a decided conviction that measuring scales of this general type are feasible, and that when corrected, extended and multiplied, they will prove of great practical and theoretical value. This outcome was not fully anticipated. I had myself previously spent nearly two years in the use of various "tests of intelligence," from which work, in spite of many items of interest, I could hardly count value received. My present belief is that the field is one that will richly repay any careful and well-directed effort.

It is something of a mystery why the scale method in the application of mental tests should not have come into general use long ago. For twenty years numerous experimenters applied tests covering almost every type of mental function. Certain correlations were crudely attempted. Interesting suggestions were made. A few age and grade tendencies were roughly ascertained. But all will admit that, for the most part, the tests were fruitless.

---

[1] *See also* Ayres, Leonard P. The Binet-Simon Measuring Scale for Intelligence: Some Criticisms and Suggestions. THE PSYCHOLOGICAL CLINIC, Oct. 15, 1911.

They were either too limited in scope, or failed to utilize non-selected subjects, or else were made under conditions impossible to duplicate. Most fatal of all, the experimentation, instead of being guided by some directing idea like that of definitely establishing age or grade standards, was usually of haphazard nature. Then came Binet with his simple device of arranging the tests in a series of groups, according to their difficulty as determined by age differences in performance. His data were of very limited extent, and rather carelessly elaborated, but the advantages of this procedure are every day becoming more apparent, and are rapidly making possible a clinical child psychology. At the same time it must be admitted that the scale is far too limited in extent, that it is very far from accurate (at least for average American children), and that it is improvable at many points.

The children tested in our experiment ranged from four to thirteen years of age. The tests were uniformly given, and with careful attention to thoroughness. Without entering here into details, it may be said that the results warrant a far more radical revision of the scale than any one else has hitherto recommended. The scale originally offered by Binet is in general far too easy at the lower end, while in the upper range it is too difficult. *In fact, the range of nine years in the actual ages of our subjects was condensed into a range of only five years of test ages.* Besides the frequent displacement up or down the scale, some of the tests are objectionable or unsatisfactory for other reasons. This is particularly true of the thirteen-year group. On the other hand, such tests as the "description of pictures," "omissions from pictures," "aesthetic judgment," drawing, "questions of comprehension," memory, reasoning ability, vocabulary and association gave specially satisfactory results.

In addition to the trial given to Binet's tests, an attempt was made to extend the scale by securing age standards of performance in four other lines. The latter included, first, a "generalization test" (interpretation of fables); second, a graded "completion test"; third, a vocabulary test of 100 words; and fourth, a test of "practical judgment" (involving the hunting of a lost ball in a circular field). The authors devised new methods of grading performance for the fable and completion tests which they believe will add much to the serviceableness of both. The vocabulary test is based upon Laird and Lee's "Vest Pocket Dictionary," and is, therefore, designed to test the child's acquaintance with the most common concepts of everyday usage, and thus to display grade of intelligence rather than accidents of technical education. It is believed that all of the above four tests will prove usable additions to the scale.

The authors have also devised a method for calculating "test age" which they believe is a decided improvement over that used by Binet, a method which gives exactly equal value to all the tests of any year group. The tests of a year group are given a combined value of 1, and the "unit value" of each question in a group is determined by dividing 1 by the number of tests in that group. It is thus possible to retain an unequal number of tests in the different groups without giving undue weight to any one test in the estimation of test age.

The following arrangement of the tests shows the main features of the revision which we have tentatively made, and indicates the basis upon which the present year's work is being conducted. Besides the four additional tests above mentioned we have added to the scale also a test of arithmetical reasoning, a test of "wit," and Goddard's "code" test. It is expected that the work of the present year will make possible some further improvements.[1] Space is lacking to present in this discussion the rather elaborate directions which we are carefully following in the application of the scale.

Name of Pupil ....
Name of School ....
Name of Examiner..................................
Age of Pupil (years and months)............ Grade........
Date of this examination: year .... month ....
time of day ....
Comments:

N.B. Examiner should check all items separately.

YEAR III (unit value .1666). 1. *a.* "What's the thing to do when you feel sleepy?" *b.* "What's the thing to do when you feel cold?" 2. Weights:—3-12 6-15 3-12. 3. Naming objects: key...... closed knife...... penny....... 4. Knows sex. 5. Repeats three digits: 641...... 352...... 783....... 6. Pictures (enumerates) 1...... 2...... 3.......

YEAR IV (unit value .2). 1. Copies square. 2. Counts four pennies. 3. Divided rectangle. 4. Chooses prettier.

---

[1] However, any reader who would like to try this edition of the scale on as many as fifty children may secure a complete set of directions and the necessary record booklets by addressing a letter to me. There will be no expense attached to the same; the only condition is that I be permitted to use the summaries of such returns (giving credit, of course, to those who wish to collaborate in this way). Correspondence with this end in view is solicited from persons who are equipped to give such tests.

1...... 2...... 3....... 5. Defines (use): a table........ a chair...... a horse...... a mamma.......

YEAR V (unit value .2). 1. Morning or afternoon. 2. Names colors: red...... yellow...... blue...... green....... 3. Puts key on chair, brings box, shuts door. 4. Vocabulary index (?). 5. Memory for sentences of 12 to 14 syllables.

YEAR VI (unit value .1666). 1. Right hand, left ear. 2. Number of fingers. 3. Counts thirteen pennies. 4. Repeats: 4379...... 2854...... 7261....... 5. *a.* "What's the thing to do if it's raining when you start to school?" *b.* "What's the thing to do if you have missed a train?" *c.* "What's the thing to do if you find that your house is on fire?" 6. Vocabulary index 12 per cent (2160).

YEAR VII (unit value .1666). 1. Copies diamond. 2. Omissions from pictures: 1...... 2...... 3...... 4....... 3. Names: penny...... nickel...... dime...... quarter...... 4. Pictures (describes). 1...... 2...... 3....... 5. Vocabulary index 14 per cent (2520). 6. Repeats sentences 14 to 16 syllables.

YEAR VIII (unit value .1666). 1. Writes from dictation: "The pretty little girl." 2. Compares: butterfly - fly; wood - glass; paper - cloth. 3. Counts 20 to 0. 4. Ball and field (score 2). 5. Repeats: 31759...... 42385...... 98176....... 6. Vocabulary index 18 per cent. (3240).

YEAR IX (unit value .125). 1. Value of stamps; 111222. 2. Names date. 3. Reading for four memories. Time...... 4. Weights, 3-6-9-12-15. Trial 1...... 2...... 3....... 5. Fifty words in two minutes. 6. *a.* "What's the thing to do when you've been struck by a playmate who did not do it purposely?" *b.* "What's the thing to do when you have broken something which does not belong to you?" *c.* "What's the thing to do when you have been detained so that you are in danger of being late for school?" 7. Vocabulary index 23 per cent (4140). 8. Completion test (score......).

YEAR X (unit value .125). 1. Copies designs: 1...... 2....... 2. Three words in one sentence. 3. Six digits: 374859...... 825746...... 762953....... 4. Ball and field (score 3). 5. Vocabulary index 26 per cent (4680). 6. Fables 1...... 2...... 3...... 4....... 7. Completion test (score 20). 8. Making change, 25 cts., 4 cts.

YEAR XI (unit value .2). 1. Arithmetical reasoning (score......). 2. *a.* "What ought one to do before taking part in an important affair?" *b.* "What ought you to say if someone asks your opinion about a person you know only a little?" *c.* "Why ought we to judge a person more by his acts than by his words?" *d.* "Why do we excuse a wrong act committed in anger more readily than a wrong act committed without anger?" 3. Vocabulary index 30 per cent (5400). 4. Fables: 1...... 2...... 3...... 4....... 5. Completion test (score 25). 6. Wit: 1...... 2 ...... 3...... 4...... 5.......

Year XII (unit value .1666). 1. Absurdities: 1...... 2...... 3...... 4...... 5....... 2. Disarranged sentences: 1...... 2...... 3....... 3. Reading for seven memories..... (Time......). 4. Suggestion (Binet's 1911 test). 5. Vocabulary index 36 per cent (6480). 6. Repeats 26 syllables (one out of three correct).

Year XIII (unit value .1666). 1. Seven digits: 2183439 ...... 9728475...... 3247196...... 2. Problems of fact: 1...... 2...... 3....... 3. Vocabulary index 42 per cent (7560). 4. Fables: 1...... 2...... 3...... 4....... 5. Arithmetical reasoning (score......). 6. Completion test (score 36).

Year XV (unit value .1666). 1. Fables (score......). 2. Changes of clock (4 minutes to 3 o'clock)...... (20 minutes after 6)....... 3. Picture (interprets) 1...... 2...... 3....... 4. Vocabulary index (score......). 5. Completion test (score......). 6. Uses code (Goddard's).

Adult (unit value......). 1. Reversed triangle. 2. President and king. 3. Ball and field (score 4, with special conditions). 4. Completion test (score......). 5. Gives sense of selection.

I believe that tests of intelligence stand in serious need of further attention before we undertake to determine standards of performance in the different branches of the curriculum. Everything else is relative to intelligence. For clinical purposes, at least, it will be of relatively little value to ascertain where a pupil stands in geography or history or arithmetic in comparison with other children, unless we also know such pupil's intellectual status. All the numerous previously made correlations which have been based upon estimates of intelligence made by the teacher or inferred from school progress are unreliable. Lacking suitable scales for measuring intelligence (and there should be at least three or four such scales instead of one), we shall never be able to determine satisfactorily any of the following matters:

1. The effects of adenoids, bad teeth, malnutrition, partial deafness, nervous inco-ordination, or any other physical defect, alone or in combination with others, upon mental progress.

2. The relation between mental progress and physiological age (An important matter sadly in need of investigation.)

3. The relation between intellectual growth and pedagogical progress.

4. The relation between incorrigibility and intellectual retardation. The degree to which morality depends upon the powers of abstraction, or generalization. (Thought to be important according to some data now in press.)

5. Hereditary influences in the field of intelligence.

6. The influences of prolonged unfavorable social conditions, chronic insufficiency of food, sleep, etc.

The reader can extend this list indefinitely. It is readily seen how fundamentally important it is to have some means available for measuring the intelligence of school children. Intellectual status is concerned in almost every problem of pedagogy or of child hygiene. Without a scale to measure mentality we are almost blocked in the further study of retardation and its causes, nor can we successfully prosecute researches with feeble-minded or supernormal children. At the present time the scale does not seem to be improving in proportion either to the rapidly increasing interest in it or to the demands upon it. An illustration is the recent New Jersey law requiring tests of intelligence to be applied in the case of all public school children retarded three years or more.

However, in spite of the many imperfections and inadequacies of the revised scale I believe that by its use it is possible for the psychologist to submit, after a forty-minute diagnostication, a more reliable and more enlightening estimate of the child's intelligence than most teachers can offer after a year of daily contact in the schoolroom. Since all human estimations are relative to some standard, the teacher has no means of discovering whether her class on the whole is above or below the normal for the corresponding age. Her standard may be too high or too low, too vague, too mechanical or fragmentary. Before many years it will probably become a matter of course to apply serial mental tests in the public schools to all pupils who are retarded or about to become retarded, or who give indication of unusual ability. The scientific management of special classes for atypical children in the public schools will be impossible until similar series of tests are multiplied indefinitely.

To ascertain the full extent and true nature of a case of mental retardation, together with its causes, is, it must be confessed, extremely difficult. In fact, with existent methods it is hardly possible at all. Our treatment of such cases hardly transcends guess-work. May we not hope that several such scales will soon be devised, each more perfect than the revision here offered, which collectively will enable the clinical psychologist in a few days to lay bare the "natural history" of a child's development; tests which will explore every line of efficiency, intellectual, volitional, motor, personal, social, linguistic, etc., which will relate all these at every point to individual peculiarities of instincts and interests and to all significant accidents of experience.

In order to make the tests of the greatest practical use it will be necessary to apply along with such measuring scales the newly-developed tests of *physiological age.* Unless this is done many children are certain to be grossly misjudged as to native ability, a mistake which in individual cases may be fraught with the most serious consequences. In justice to the child, the normality of whose intelligence has been questioned, tests for physiological age should always be applied before institutional treatment is recommended, and perhaps occasionally after commitment.

Now that the individual treatment of pupils in the schools has begun, there is no stopping short of this ideal. Tests must be developed which will enable us to differentiate all degrees of intellectual, ability and all kinds of intellective unevenness; others which will mark for special educational effort the pupil whose emotional equipment and volitional tendencies threaten the onset of criminality, insanity, hysteria, neurasthenia, or other of the neuroses. With the accumulation of positive experimental data on so many aspects of individual mentality John Stuart Mill's suggestion looking toward a science of human character, *ethology,* as he called it, would gradually become possible. The modern studies in the psychology of testimony, suggestibility, measurements of mental growth, super and sub-normality, submerged complexes, emotivity, psycho-analysis and association reactions offer a fascinating field for the genetic study of personality.

A word may be added respecting recent criticisms which have been offered to the effect that so-called mental tests being measures of a product, not of a mental process, are hence valueless for psychology. This, of course, is the extreme point of view of the uncompromising structural psychologist who limits by definition the legitimate scope of the science to the study of the content of consciousness. In the light of the recent developments in dynamic psychology mentioned in the last paragraph, all of which (together with certain others) have emphasized anew and more forcibly than ever before the importance for human behavior of the subconscious, instinctive and submerged elements of mental life, such a limitation of the scope of psychology becomes an anachronism. In so far as these structural elements shed light upon function they are significant, but they can no more usurp the entire domain of psychology than the chemistry of the bones and muscles can swallow up or displace the science of physiology. As a man's efficiency in the material sense is measured by the quantity and quality of the work turned out in a given time, with method occupying a secondary place, so in the mental realm, the accomplishments of mental activity are the thing of most vital concern; the structural elements are simply a means to the end. Furthermore, in child psychology, as in animal psychology, it is impossible to get at the structural elements. We can only measure the performance in terms of objective results. It appears no more unreasonable to state a child's mental ability in terms of performance than it is for the historian to assign Napoleon his place in history from a consideration of his life activities. It would, of course, be interesting to know Napoleon's type of imagery, the structural accompaniments of his reaction time to various kinds of sense stimuli, even the chemical formulæ for all parts of his material body,—but it is not clear how much this would add to our understanding of Napoleon as an historical figure.

A STUDY OF THE BINET DEFINITION TESTS.

By Isabel Lawrence,
State Normal School, St. Cloud, Minn.

The purpose of this study is to apply the Binet scale for grading of mentality in one phase only, that of definitions, and to compare the results with the estimates furnished by teachers of the children's ability to do school work. To try out one feature of the Binet scale at a time seems a thorough method of investigating its usefulness. Such a method, moreover, will assist in determining what features of the scale must be modified if it is to be used in American public schools.

The definitions—the feature chosen for this study—make possible a written test from the second grade through the eighth. While written work is undoubtedly more difficult than oral, this written definition test has several advantages, namely:

1. Time. This test occupied forty minutes. No superintendent can himself take the time to examine separately over a thousand children.

2. Fitness. The definitions are among the tests said by Binet to determine the maturity of intellect (*la maturité* as distinguished from *la rectitude*), and being a language test, are more likely to grade power to do school work as at present conducted, than are some of the other tests.

3. Trustworthiness. As the test was made at the same hour throughout the city and the papers were taken up before the close of the session, the pupils had no chance to learn from each other what the questions were. The teachers themselves were ignorant of what the test was to be, and even of its purpose.

4. Service as a coarse sieve. As the written test is more difficult than the oral, pupils passing it may safely be considered as regular, that is, of normal intellectuality for their age. The comparatively small number who do not pass it, may be examined afterward orally and their status determined.

The test was given in the first part of March, 1911, to 784 pupils in the elementary schools. These were mainly children in the public schools at St. Cloud, where arrangements were made for the test through the courtesy of Superintendent A. N. Farmer, and in the practice classes at the State Normal school. Afterward a set of papers was sent in from the Elk River schools by Miss Ruth Atkins. Valuable assistance was rendered by Miss Belle Ranney of Wellesley College, both in reading papers and examining orally children of the first grade.

The questions were arranged in four groups, each group including the definitions required by Binet for one age. The first group served for both the sixth and ninth years, the children of six being expected to define in terms of use and those of nine in terms superior to use. Group I consisted of, What is a fork, a table, a chair, a horse, iron? Group II, the eight-year test, What is the difference between paper and cloth, a butterfly and a fly, glass and wood? Group III, the eleven-year test, was, What do you mean by charity, by justice, by goodness? Group IV, the thirteen-year test, was, What is the difference between pleasure and welfare, event and prevent, pride and pretension, poverty and misery, evolution and revolution? A pupil was scored as passing any group for which a majority of the definitions (two out of three, or three out of five) were satisfactorily given.

All the grades were given an opportunity to answer all the questions. The teacher gave orally one direction or question at a time, and waited not more than two minutes for all to finish. The pupils received no suggestion as to their answers in matter or form.

The words used are literal translations of Binet's except that in Group I, *iron* is substituted for *mamma* which it was feared the older grades might not take seriously. In Group IV, événement and avènement could not be so translated as to give the same test in discrimination, so event and prevent were substituted.

There are no definitions in the Binet tests, for the ages of seven, ten, twelve, fourteen and older. Pupils of these ages are therefore considered "at age" if they pass the test for six years, nine years, eleven years and thirteen years respectively. There are, therefore, more regular pupils of these ages than there should be, for some of them might have failed on the test for their own age, had there been such a test.

In marking the number of years of retardation or advancement, the same difficulty appears. A pupil of eleven, failing to pass the eleven-year test, but passing the nine-year test, might have passed the ten-year test, had there been one. In such cases, the pupil is given the benefit of the doubt and marked retarded for one year only. Pupils of six years passing the six-year test, but not the eight-year, might have passed a seven-year test, had there been one. Such cases, in this study, are marked at the highest age which they pass. Since there were many pupils thirteen years or over who could not be tested for being above their age, this feature of the test is especially inadequate for the older ages.

TABLE A. COMPLETE RESULTS OF THE DEFINITION TESTS WITH 784 CHILDREN.

Age	6		7				8				9					10						11					
Grade	I	II	I	II	III	IV	I	II	III	IV	I	II	III	IV	V	I	II	III	IV	V	VI	II	III	IV	V	VI	VII
Above age 4 yrs.					1										2												
3 "								1												3	1						
2 "	38			2									1	1	4											6	
1 "			21	22	2	1		11		3									2	9							
At age	12	1	5	10			12	15	12				16	17	2		1	3	17	12				1	10	14	
Below age 1 yr.	7						5	7	11		5	8	8	7										9	7	5	1
2 yrs.											1	2	1	1		1	3	6	16								
3 "								5	3								1	2	1	3			3	1	3	4	
4 "												1	2									2	1	1	4		
5 "																	1	1		2							
6 "																							1				
7 "																											
8 "																											
Total	57	1	26	34	3	1	17	39	26	3	6	11	28	26	8	1	6	12	36	29	1	2	5	12	24	29	1
	58		64				85				79					85						73					

Age	12						13						14					15						16			17+
Grade	III	IV	V	VI	VII	VIII	III	IV	V	VI	VII	VIII	IV	V	VI	VII	VIII	III	IV	V	VI	VII	VIII	VI	VII	VIII	VIII
Above age 4 yrs.																											
3 "																											
2 "																											
1 yr.				1	7	1																					
At age		3	14	22	6					4	13	9	1	6	1	13	39				1	2	15		1	11	9
Below age 1 yr.									5	9	7	4															
2 yrs.		1	4										1	1	1		3										
3 "									4	5	4	3								5	3	4	8				
4 "	1	3		2	1								1	2	2	4	3							1	1	7	
5 "	1		3		1			3	1	4	3	1							2		2	5	8				6
6 "									1	1					7		1									1	2
7 "	1																										4
8 "							1											1			1						
Total	3	7	21	25	15	1	1	3	11	23	27	17	3	9	11	17	46	1	2	5	7	11	31	1	2	19	
	72						82						86					57						22			21

TABLE B. SUMMARY OF AGE AND TEST CONDITIONS.

Actual age..........	6	7	8	9	10	11	12	13	14	15	16	17 or over	Total
Advanced according to the test..........	38	49	15	8	15	6	9						140
Normal*..........	20	15	62	63	33	47	45	51	60	18	12	9	435
Retarded..........			8	8	37	20	18	31	26	39	10	12	209
Total..........	58	64	85	79	85	73	72	82	86	57	22	21	784

* One year below age was also counted as "normal" in this summary.

In table A the complete results for the 784 children tested are given by both age and grade. The age at the last birthday is recorded. The dots above the Roman numerals of the grades indicate the theoretical grade for the age, on the supposition that the children enter the first grade at six years and progress one grade each year, and in addition one grade below the theoretical standard. This makes some allowance for children who have just passed a birthday and permits one to see at a glance either the theoretical grade for the age or the normal grade for American school children as suggested by the work of Mr. Ayres.[1]

Since advancement is not as well tested as retardation for the greater number of pupils, and since written work was found to be more difficult than oral would have been, it seemed advisable in the summaries of tables B and C to consider pupils one year behind actual age according to the test as still "normal," and they are so counted in these two tables.

The grade teachers, knowing nothing of the results of the test, sent in their estimate of the scholarship of their pupils, grading them as *very poor, poor, medium, good, very good,* and *excellent.*

A comparison of the mental

---

[1] Ayres, Leonard P. "Laggards in Our Schools." New York: Charities Publication Committee, 1910. See also THE PSYCHOLOGICAL CLINIC, Vol. II, p. 121.

ability of the children according to the test, with the estimates of their ability in school work as furnished by their teachers is brought out in table C.

TABLE C. TEST COMPARED WITH SCHOLARSHIP.

Estimate of Teacher		Poor or Very Poor	Medium or Good	Very Good or Excellent
Whole Number of Pupils...		105	533	146
Estimate of Test	Advanced......	10 or 10%	80 or 15%	50 } 79%
	Normal........	14 or 13%	356 or 67%	65
	Retarded.......	81 or 77%	97 or 18%	31 or 21%

Two hundred and nine pupils in all are rated as mentally more than one year below their age by this test. Marks of *poor* and *very poor* in school account for 81 of these; 76 others rated below age by the test who were marked *good* and *very good* by their teachers, were in a grade lower than they should be for their age. Thus 157 out of the 209 or 75 per cent of the pupils pointed out by the test as behind their age are so recognized in the schools. Out of the 146 pupils marked *good* or *excellent,* 115 or 79 per cent are marked "at age" or above age by the test.

Another correspondence between the school grading and the estimate of mental ability given by the test, may be seen by noting how many of those pupils who are behind grades marked by dots (table A) are one or more years retarded according to this study, also how many of those ahead of their grades are found in the list of pupils advanced mentally according to this test. Only 19 pupils are ahead of the grades marked by dots; 16 of these pupils are estimated by this test as above their age mentally, two are "at age" and one below age. One hundred and forty-one pupils within the ages of seven to thirteen inclusive, grades and ages being fairly well distributed, are behind the grades in which they should be. Of these, 103 are estimated by this test as below age mentally, while 38 are estimated as "at age." Perhaps it is not well to push percentages too far, until we have a test for each age, but roughly speaking about 75 per cent of the so-called laggards in school are pointed out by this test to be mentally retarded one year or more, while the same per cent of those who are advancing in school more rapidly than the rank and file are found, as above indicated, to be advanced a year or more mentally.

The child regarded as exceptional by the school system, will be proved to be exceptional by the tests, much more frequently than will the child indicated as exceptional by the test be found to be exceptional in school work. This fact was pointed out by Prof. J. B. Miner, who has summarized the results of table A upon several different bases of calculation, such as the most frequent grade for the age, two most frequent grades for the age, above and below actual age by the test, one year above and below age, etc. This fact seems to come out whatever basis of calculation is adopted, if, for the reasons indicated above, the ages, seven to thirteen inclusive, are used to figure retardation, and six to twelve years inclusive to figure advancement. For example, of the 219 pupils below actual age by the test, 103 or 47 per cent are behind the dotted grades. Of the 140 pupils above actual age, 15 or 11 per cent are above the dotted grades for the ages. These ratios are to be compared with 75 per cent agreement noted above. The closest agreement when the exceptional child is chosen by the test, is apparently found when one notes those *more* than one year below or above age who are below or above the most frequent grade for their ages. In this case 57 per cent of those exceptionally retarded, according to the test, and 20 per cent of the exceptionally advanced mentally are found respectively below and above the most frequent grades for their ages. The easy eight-year test is responsible for a large part of the lack of agreement in regard to advancement, since so many six- and seven-year-old pupils who are at the common grades pass this test.

The fact that the exceptional child indicated by the test has hardly an even chance of being exceptional in school grading, may be due, as Dr. Miner suggests, to the unwillingness of school teachers to put a child either behind or ahead of the usual grade for his age. For the same reason when the pupil is exceptionally forward or backward in his school grades the chances are high that he will be found exceptional by the test.

Some examples of the children's definitions may be of value.

Group I is characteristically defined thus by a six-year-old girl:—

(fork)	1. To eat with.
(table)	2. To eat on.
(chair)	3. To sit on.
(horse)	4. To ride on.
(iron)	5. To hit with.

Use, and use to the child is predominant. As the children grow older, the following definitions of "table" show the types in a developmental series:—

F. 8. A table is what we eat on.

F. 8. A table is something to eat on.

M. 9. A table is an object to eat off of, and to put paints and papers on.

M. 10. A table is an article of furniture.

M. 10. A table is a thing made of four or five planks cut off a certain length, varnished, and set on round sticks.

M. 14. A table is a wooden article of furniture used to eat on and put things on. It may be round, square, or oblong or adjustable.

Group II is readily answered by children from two and a half up:—

F. 4. Paper is to wrap in; cloth is to sew.

F. 5. Paper is to write on; cloth is to make my dress.

M. 6. Paper is thinner than cloth.

M. 6. Paper you can tear easier than cloth.

M. 7. You can tear paper, you have to cut cloth.

M. 8. Paper is stiff; cloth is limber.

F. 14. Paper is pressed from pulp; cloth is woven from threads.

F. 4. A butterfly is bigger than a fly.

F. 6. A butterfly is got dots; a fly hasn't.

M. 6. A butterfly can't buzz, but a fly can.

M. 7. A fly wants in and a butterfly wants out.

M. 7. A fly is smaller than a butterfly and hasn't such a long tongue.

F. 13. A fly carries diseases and a butterfly does not.

F. 4. A butterfly is sometimes yellow, purple, green, white, but a fly is black.

Limited observation causes such incorrect statements as—

A fly comes from eggs and a butterfly from caterpillars.

A butterfly sinks to ground; a fly rises in the air.

F. 6. You can get wood in your fingers but glass cuts you.

M. 6. Glass we can see through; wood we cannot.

M. 8. Glass you can sling on a rock and break, but wood you have to saw.

M. 7. Glass "busts". You chop wood.

F. 8. Glass is tenderer than wood.

M. 10. Glass can be melted; wood cannot.

M. 11. Wood grows. Glass has to be made from minerals.

Group III is hard work for the eleven-year old:—

F. 11. Charity means to give things to the poor. Buying Red-Cross stamps is charity.

F. 13. Charity means to be good to sick people, and to give money, clothes and food to the poor.

M. 11. Justice means to not steal and to not cheat.

M. 14. Justice is to be square with everybody.

M. 14. Justice is to treat all alike.

Sometimes the idea of a justice as a man creeps in,—

M. 15. When a man does wrong, he is brought before a justice and asked why he did it and how he did it.

F. 11. Goodness is to do right by all human beings and dumb beasts.

M. 8. Goodness is when a man says "Goodness! you're house is on fire."

M. 13. If any one was "scairt," they'd say it.

M. 15. Goodness is an exclamation.

While Group IV was too hard, some strong and many interesting answers were given, even by younger pupils:—

F. 8. Pleasure is to go where you want to. Welfare is to stay home and work.

F. 13. Pleasure is to do something that might only be fun for the time. Welfare is to do something for your future.

F. 14. Anyone can have pleasure and injure their welfare by not taking care of their health.

M. 14. Pleasure is a thing made by man; welfare is destiny.

M. 13. Poverty is when you are pretty low down and still keep clean. Misery is when you're awful low down and don't keep clean.

F. 13. Poverty is when you haven't a cent of money, and have to depend on the neighbors. Misery is when you are starving because the neighbors don't help you.

F. 12. Poverty is need of money; misery is need of something to brighten your mind.

F. 11. Poverty is someone very poor but can get along. Misery is when they can't get along.

M. 10. An event is a circus. Prevent is to stop you from going to it.

M. 11. An event is an accident or adventure. Prevent is to stop the accident or adventure.

M. 14. An event means that something has happened to somebody. Prevent is to keep it from happening to you.

F. 11. Pride is when you go to a party, and feel nice and stiff. Pretension is when you make believe that you are having a good time.

Revolution was defined as *war*, as *a great army of men*, as *birth of a brave man*, as *a time when our grandfathers got killed.*

M. 10. Evolution is not to fight; revolution is to fight.

M. 8. Revolution goes round on axles like a ball.

The tendency to guess at meaning through the sound, or to remember words only, is illustrated by the following:

M. 12. If somebody wrongs anybody else, they will both be justed (justice).

M. 6. Charity means that you want cherries.

M. 8. Charity is a King's chair.

M. 10. Justice is to have your pupils do just as they like to you.

F. 10. Charity is a place that begins at home.

F. 9. Welfare is when you're going away and bid everybody farewell.

F. 13. Poverty is when you have no money; misery is when you're too stingy to spend a cent.

Conclusions.

1. The definition test has served the purpose of separating grades of intellectual ability in a coarse way. It thus provides a method, independent of school grading, to discover exceptional children who can then be more thoroughly tested.

2. Of the exceptional children, as indicated by the school grading and by scholarship, enough are exceptional, according to the test, to prove the value of the tests. Of the exceptional children, as indicated by the tests, a considerably smaller percentage are in exceptional grades for their ages.

3. The eight-year test is decidedly too easy, 38 out of 58 six-year-old children passed it. The thirteen-year test is decidedly too hard, only 26 out of 82 thirteen-year-old children passed it. The difference between evolution and revolution was not given correctly in a single instance by pupils in the eighth grade. The transference of the eleven-year test to twelve, as suggested by Miss Katherine L. Johnston in the *Training School Record* (London) November, 1910, seems unnecessary. It would give 31 eleven-year-old pupils above age in the test, to 22 "at age". The transference of the thirteen-year-old test to an older age, which Miss Johnston also suggested, seems to be a movement in the right direction. The older pupils in this study were not sufficiently numerous or normally distributed to indicate what would be its proper place.

4. An attempt was made to classify on the basis of advancing the child one year beyond the age for a group of definitions when all the answers were satisfactory for that group. The attempt proved Binet's opinion that definitions test what he calls *la maturité* of the intellect, not *la rectitude*. Scarcely any pupil was found completely accurate with any group, unless it were Group I.

5. The definition test can serve only as a coarse sieve. Its correspondence with school grades may be due to the predominance of language training. Other Binet tests should be tried before comparisons are made and conclusions drawn.

6. Group IV is not well adapted as a test in American schools. The difference between except and accept, arraign and arrange, illusion and allusion, suspect and expect, and other definitions of terms in daily use with us, would be preferable to literal translations of Binet's terms. This is with the understanding, of course, that the test is moved up to an age of greater maturity than thirteen.

A PRACTICAL GUIDE FOR THE ADMINISTRATION OF THE BINET-SIMON SCALE FOR MEASURING INTELLIGENCE.

By J. E. Wallace Wallin, Ph.D.,
Stanton, Iowa.

Various considerations have constrained me to prepare this guide. First, the Binet-Simon scale is coming into wider and wider use in institutions for defectives (feebleminded, epileptic, insane, criminal, juvenile delinquents) and in the public schools throughout the country. Such varied application of the tests should in time yield valuable comparative knowledge of various classes of individuals. It is evident, however, that the results will have no comparative, scientific value unless uniformity is observed in the administration of the tests. Discrepancies in the results of different experimenters are often entirely traceable to departures or differences in the method of giving the tests. Naturally some methods will be bad, some good and some indifferent; in any case, the results will generally hinge on the particular method used, and they will have absolutely no comparative value unless a standardized procedure has been followed. In the simpler tests the standardization will often not need to be elaborate, but a minimum amount is always essential.

Secondly, it is my experience that uniformity in experimental procedure is out of the question in any branch of psychological research unless the conditions, method, and procedure are definitely and fully formulated. There is a peculiarly urgent need for explicit directions in the administration of the Binet-Simon scale, because the tests are being given by persons with little if any scientific (and particularly any psychological) training, and who therefore are in no position to formulate a correct procedure for themselves, nor to foresee or circumvent the methodological pitfalls which lurk in all kinds of scientific work. Hence to be of practical value the directions for handling the Binet-Simon scale should be given in the form of a compact, condensed guide, instead of being scattered throughout a bulky text; and the procedure, the questions or directions, should be so formulated that they can be used verbatim.

Thirdly, some of the tests have not as yet been sufficiently detailed, conditioned or standardized, obviously because this cannot be satisfactorily done *a priori,* but only after extensive testing. The scale has now been used and criticised somewhat freely, so that we are in a position to improve the procedure at various points and to offer various suggestions. In doing this it is advisable to proceed along conservative lines and disregard such suggestions as have not been subjected to the test of experience.

Fourthly, a number of studies[1] have demonstrated that the scale itself, aside from the procedure, is imperfect at various points. While these imperfections are not such as to render the 1908 scale worthless, there is imperative need to carry forward the work of revision and improvement, so that we may eventually obtain a maximally reliable scale. But this work (with normal children, of course,) cannot be satisfactorily done unless a fairly uniform and standardized procedure is followed; without this we can expect nothing but conflict and discrepancy. Nor does it seem advisable to revise the 1908 scale for American use until it has been more extensively tried out in accordance with a standardized procedure.

It is in the hope of aiding the work of standardizing the experimental procedure that the following guide has been prepared—not as a finality but as a practical pathfinder. The attempt has been made to outline the procedure which I have found most satisfactory, but advantage has also been taken of the suggestions of other writers. To explain why one form of procedure should be used and another avoided, or to enter upon an explanation or justification of the tests themselves, would require more space than is here available. It is intended to make this guide supplement, rather than supplant, the statements or texts already extant. It may reasonably be expected that anyone who intends to use the scale should familiarize himself with at least the English versions.[2]

I have followed the 1908 series, except that the tests for idiocy, 1 to 6, have been added from the 1905 series. Tests 17a and 50a have also been added. The order in which the tests appear corresponds closely with the originals.

---

[1] For certain general criticisms, and a program of work in the psycho-clinical field, see "The New Clinical Psychology and the Psycho-Clinicist," *Journal of Educational Psychology,* March and April, 1911. "Human Efficiency," *Pedagogical Seminary*,, 1911, 74 *ff*.

[2] Cf. Binet et Simon, Le Développment de l'intelligence ches les enfants. *Année Psychologique,* Tome XIV. Otto Bobertag, Ueber Intelligenzprüfungen (nach der Methode von Binet und Simon), *Zeitschrift für angewandte Psychologie,* V, 1911. pp. 105-208. Henry H. Goddard. Binet's Measuring Scale for Intelligence, *The Training School,* VI, No. 11, 1910. E. B. Huey, The Binet Scale for Measuring Intelligence and Retardation. *The Journal of Educational Psychology,* I, 1910, 435*f*. Katherine L. Johnston, An English Version of M. Binet's Tests for the Measurement of Intelligence, *Training School Record*, London, November, 1910, Guy M. Whipple, Manual of Mental and Physical Tests, Baltimore, 1910, Chapter 13).

The Binet-Simon Diagnostic Tests of Mental Age (Intellectual Development).

(Abbreviations: S = subject. E = experimenter. + = passed. — = failed.)

Name Born Place of birth Nationality
Sex Health Physical defects School grade
School standing (years pedagogically retarded or accelerated) Examined By Mental condition during test GENERAL RESULTS: passed tests of mental age Chronological (actual) age Years retarded intellectually
DEGREE OF MENTALITY: SUPERNORMAL, NORMAL, SUBNORMAL, BACKWARD, FEEBLE-MINDED (LOW, MIDDLE OR HIGH IDIOT; L., M., OR H. IMBECILE; L., M., OR H. MORON).

Tests for Idiocy—Mental Age 1 to 2 Years.

Age 1.

1. Move lighted match slowly before S.'s eyes (or ring bell from behind S.). Mark + if eyes follow or S. listens. Watch for incordinated eye movements.

2. Place small block (cube) in palm of S.'s hand, with statement, "Here is something for you." + if S. grasps and handles. Prehension from tactual stimulation.

3. Move colored ball or cylinder, suspended by string, slowly before S.'s face (eyes) or hands, without touching. + if S. grasps and handles.

Age 2.

4. Hold before S., or place within S.'s reach a piece each of candy (or cookie) and wood of equal size. Avoid favored position for either. + if candy is chosen.

5. Wrap paper about candy in S.'s sight, and hand packet to S. + if S. removes paper before eating.

6. IMITATIONS: E. extends hand for greeting as S. enters room. "Do as I do"; or: "Do this way." E. claps hands; hands in front, on head or shoulders; rises on toes, etc.

COMMANDS (by gestures or words): "Sit down," "Stand up," "Shake hands," "Pick up" (object purposely dropped by E.), "Give me that book." + if S. imitates simple movements or executes simple commands. Watch out for failure through negativism or stubbornness.

Tests for Imbecility—Age 3 to 8 Years.

Age 3.

7. "Where are your eyes?" "Nose?" "Mouth?" "Hair?" Or: "Open your mouth," "Close your eyes," Touch your nose." + if S. correctly points to parts.

8. "Repeat" (alternative forms): "Say after me," or: "See if you can say just what I say without making a single mistake." Or: "I'm going to read a sentence (or tell a little story). When I get through I want you to say it word for word, just as I did, without a single mistake. Now listen carefully"):—

"'It is cold and snowing.' (Say that.)" Or: 'My dog's name is Fido.' Or: 'In summer it is warm.' E. speaks slowly (not too slowly, or haltingly), distinctly, with expression, while there is *no noise* and S. is *attentive*. Shield sentences from S.'s eyes. No repetitions allowed. E. records reproduction verbatim.

Six syllables in *one* sentence. Use other six syllables in single complete, easy, concrete sentences if above become familiar. + if S. reproduces one of the three absolutely correctly.

9. Repeat ("I'm going to say some numbers. Listen carefully, because as soon as I get through, I want you to say them just as I did. Now listen"): "'7 2.' ('Say that.' Or: 'What did I say?'): Or: '9 1.'" See directions under 8. If necessary illustrate thus: "so when I say '8 5' you must also say '8 5.'" Pronounce digits distinctly *once,* as single, detached units, without accent, one-half second apart. No consecutive numbers. Shield numbers from S.'s eyes. Two digits. One out of three absolutely correct, passes.

10. "What do you see in this picture?" "What is it about?" Or: "Look at this picture carefully and tell me what you see, what it is about." If necessary urge; "anything else?" Show S. only familiar pictures in colors of people and situations, *strongly suggestive of action.* Of the Jingleman Jack pictures (these and all the other supplies for the Binet-Simon tests can be secured from C. H. Stoelting Co., 121 N. Green Street, Chicago, Ill.) the best are probably the pictures of a man chasing children from the steps, of the plumber and the defective water pipe, of carpenters building a house, of a man mowing grass, and of a man cutting hair. All these are admirable for purposes of simple enumeration and description, but not so good for eliciting an interpretative response. Pictures equally good for all three purposes are needed. Simple ENUMERATION of objects passes (row of substantives). (Cf. test 32.)

11. "What is your name?" Preferably asked at beginning of sitting. *Family* name required.

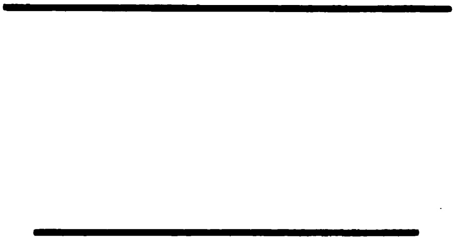
Age 4.

12. "Are you a boy or a girl?" (asked of boys). "Are you a girl or a boy?" (for girls).

13. Show successively a *key, penny, knife,* (*pencil*). "You know what that is. Well, what is it?" Correct naming or interpretative actions pass.

14. "Repeat: '7 4 8.' Or: '5 9 7.' Or: '1 6 3.'" Follow directions in tests 8 and 9. THREE digits.

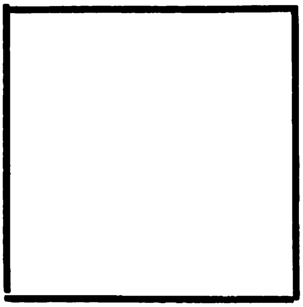
15. "Which of these two lines (pointing to them) is the longer?"



Do not point to longer last if each is pointed to separately. Cover balance of paper when necessary. Hesitation = —.

Age 5.

16. "Here are a couple of boxes, which look alike, don't they?" "But they don't weigh the same. One is heavier than the other. Now I want you to lift the one after the other, this way, and give me the one which feels the heavier. Feel carefully." E. takes each box successively between two fingers, or the thumb and finger, of the right hand, and lifts it about 1 cm. Use *similar* metal pill boxes of the same size. Filling must not rattle. + if 2 are right in 3 trials, with 3 and 12 grams (or repeat with 6 and 15 grams).



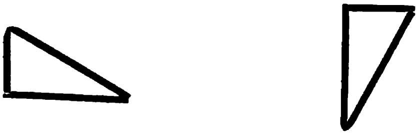
17. "Draw a figure like this (as nearly like this as you can)": + if figure is not round, or if right angles are fairly well preserved, or if figure has squared appearance, it is recognized as an approximate square. Proportions thus need not be exactly correct. S. must use *pen.* Record time. E., non-committal, asks after S. has finished: "Is it good?" "Is it like this?"

'I heard a bird singing in the treetops.' Or: 'we should starve

'I heard a bird singing in the treetops.' Or: 'We should starve

if we had nothing to eat.' " TEN syllables. Follow directions in test 8.

18. Place on table before S. a rectangular visiting card, about 4.5 by 7.5 cm., and triangular pieces cut diagonally from a similar card and placed thus:



"Put these two pieces (pointing to the triangles) together so that the two will look like this one (pointing to the rectangle)." If necessary: "Change them about until you get them right. Now quickly." Repeat instructions if necessary, encourage and restore triangles to original position if they get turned over. At close: "Are you done?" or: "Is it right?" E. does not indicate approval or disapproval by manner or word. Record time.

19. Place four bright pennies, heads up, ½ cm. apart, in a row. "You know what these are, don't you." If not, E. informs S. "How many pennies are there? Point to each one as you count them aloud." Cf. test 33.

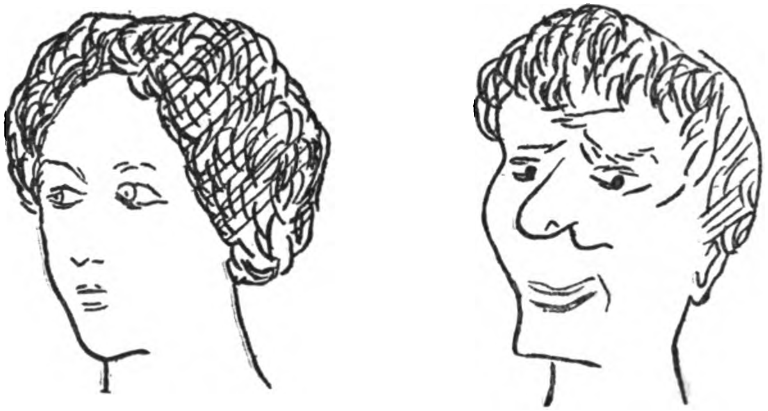
Age 6.

20. "Hold up your right hand." "Touch your left ear." A mistake rapidly corrected = +. The slightest doubt if not removed by a further question (left eye, right leg) = —. E. gives no hint by word or manner.

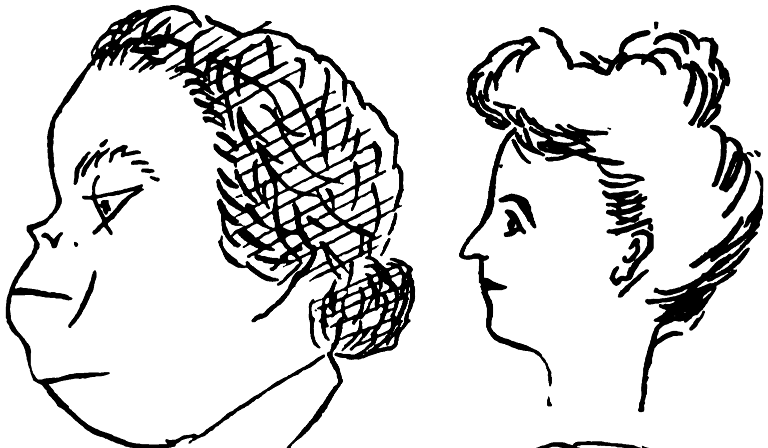
21. "Repeat: 'In the summer time we like to take long morning walks in the park.' Or: 'When we get up in the morning we dress and then we have our breakfast.' Or: 'I saw two horses pulling a wagon on a very steep road.' " See directions in test 9. SIXTEEN syllables.

22. Show the pretty and ugly faces in pairs. "Which of these two faces is the prettier (or uglier)?" Or: "Which is the good looking one?" 1 2 3 All three must be correct. Both are pretty = —.

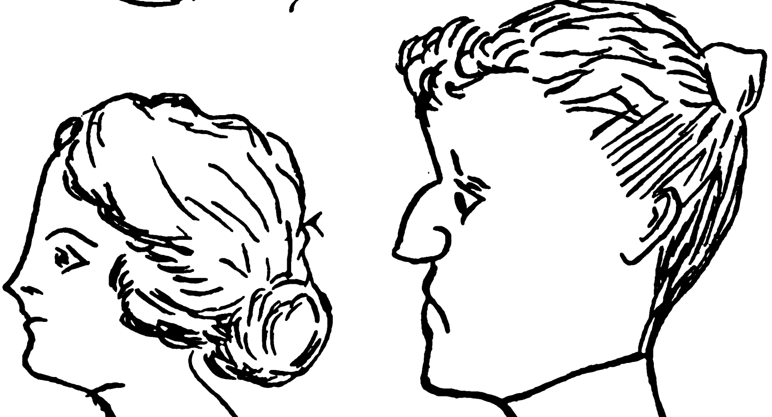
23. "You know what a fork is, don't you?" ("You have seen a fork.") "Well, tell me, what is a FORK?" If necessary repeat and urge. Similarly for CHAIR, TABLE, HORSE, HOUSE.



1



2



3

The Psychological Clinic is indebted for the loan of these cuts and those on p. 225 to the courtesy of Dr. Oliver P. Cornman, Associate Superintendent of Schools of Philadelphia, and Chairman of Committee on Backward Children Investigation. See Report of Committee, Dec. 31, 1910, appendix.

MAMA. Record replies verbatim. Definition by stating USE, or MATERIAL OR PARTS of object passes 3 out of 5. E.g., A fork is to eat with. A fork is made of wood and iron. A fork has a handle and tines.) CLASSIFICATORY or logical definition (class or superordinate term) passes test 44. In case classificatory definition has not been proffered spontaneously, say, after S. has finished the series: "Good, so we may say that a mama is a ——?" And similarly with the other words, proceeding in reverse order (*i. e.* house, horse, table, chair).

24. "Now I want you to do something for me (do me a little favor). Take this key and place it on that chair (pointing); then shut (or open) that door (pointing); and then bring me that box. Remember, first the key on the chair, then shut the door, then bring the box. Now go." Make certain that the child perceives the objects. No aid. Triple order must be entirely correctly executed.

25. "How old are you?" Answer in years passes. Verify by official record. (*Supplementary:* "When is your birthday?")

26. "Is this morning or afternoon"—or: "Is it the morning or afternoon now?" Reverse order in the afternoon. Emphasize both terms equally.

Age 7.

27. Show the unfinished pictures one at the time. "What is lacking (or missing) in this face (in this picture, for the standing woman)?" "Look at it carefully." Three correct out of 4 pass. "Eyes" instead of "eye" and "hands" instead of "arms" = +. "One ear" for face without eye, and "one eye" for face without nose = —.

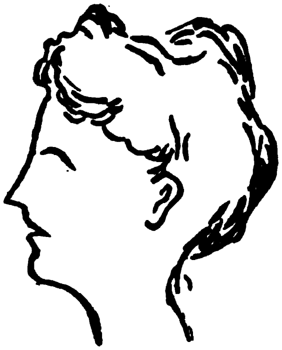
28. "How many fingers have you on your right hand?" "On your left?" "On both hands?" Prompt answers, without counting, in all three cases required. Correct number of fingers, exclusive of thumbs, passes.

29. Ask S. to write the following from copy,

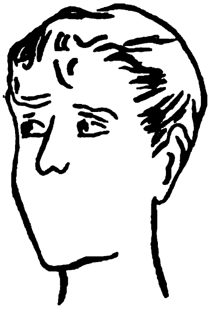
See little Paul

("Copy these words.") Record time. + if legible to one unfamiliar with original.

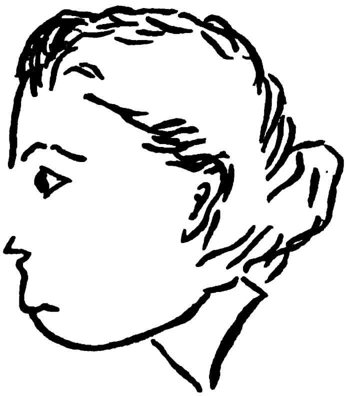
4

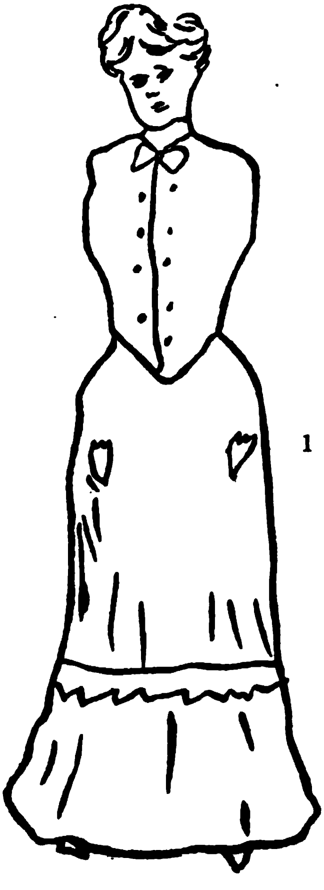


3



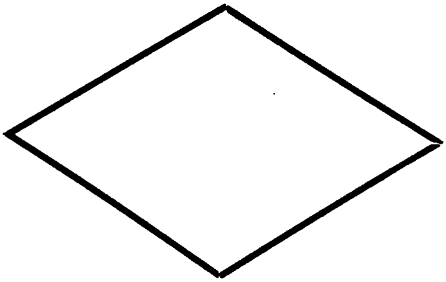
2





1

30. "Here is a figure that I want you to draw. Make it as much like this (pointing to the diamond), as you can." Or: "Draw one like it." Record time. Must be recognizable as a diamond. (See test 17.) (*Supplementary* question: "What do you call the drawing?")



31. "Repeat: '4 7 3 9 5.' Or: '1 0 6 2 8.' Or: '4 5 9 3 7.'" See directions in tests 8 and 9. FIVE digits.

32. Same as test 10. DESCRIPTION of ACTIONS and SCENES passes. S. must tell what is *taking place,* what is *being done,* in the picture. Sentences or phrases instead of disconnected words. Correct *explanation* or *interpretation* of the pictures (S. tells WHY they are doing so and so—subjective interpretation of actor's characters or motives), also passes this age—and possibly entitles him to a credit in age 12.

33. Counts aloud 13 pennies as in test 19. S. must touch each with finger. No omissions or double countings.

34. "What is that?" Display (but not in the order of value) successively the heads of a *bright* PENNY, QUARTER, DIME and NICKEL. No error. Cf. test 48.

Test of Moronity—Mentality of 8 to 12 Years.

Age 8.

35. "I want you to read this piece (or story) aloud." Place the following before S. (53 words):

THREE HOUSES BURNED.

New York, September 5th. A fire last night burned three houses in Water street. It took some time to put it out. The loss was fifty thousand dollars, and seventeen families lost their homes. In saving a girl who was asleep in a bed, a fireman was burned on the hands.

A couple of seconds after S. has finished, continue: "Now tell me what you read about." "What did it say?" "Tell me as well as you can in your own words." Later: "Anything else?" No specific questions, no aid (except to pronounce difficult words), allow time. Purpose of test unknown to S. Record time of reading, miscalled words, and verbatim reproduction. Score as follows:

New York,/ September 5th./ A fire/last night/burned/ three houses/in Water street./ It took some time/to put it out./ The loss/was fifty thousand dollars,/and seventeen families/lost their homes./ In saving/a girl/who was asleep/in a bed,/a fireman/was burned/on the hands./ (20 memories.) One-half credit may be scored for the following part unities: September/5th/ three/houses/Water/street/seventeen/families/thirty / thousand / dollars. Unessential words may be omitted without loss. Two memories or unities (simple ideas, as above) pass.

36. Show S. 3 one-cent and 3 two-cent stamps, pasted in a row on a card thus: 1 1 1 2 2 2. "You know what these are?" If S. does not know, tell him the value of the stamps. "How much would you have to pay for all of them at the post-office?" Or: "What do they all cost?" "Point to each one, and count them up." **Time: 10 sec.**

37. Place saturated (but not glossy) red, yellow, green, and blue papers (2 by 6 cm.), pasted on a grey cardboard, before S. E. points to each color in succession, beginning with red, as rapidly as possible, saying: "What do you *call* this color?" (Or: "I want you to *name* these colors, as I point to them, as fast as you can.") Don't ask, "What kind of a color is that?" or: "Which color is that?" Must NAME all correctly. **Time: 6 sec.**

38. "I want you to count backward from 20 to 0 (or 1) as fast as you can." If necessary: "Begin with 20, then 19, and so on. Now quickly." No prompting. One omission or transposition allowed. **Time: 20 sec.**

39. Give S. a pen. "I want you to write a little sentence (or story) which I shall give you. Now listen carefully: 'The pretty little girl runs.' (Or: 'Cats like to play with rats.'). Now write that." E. may repeat sentence, but don't show copy. Record writing time. Orthography need not be perfect. Tell S., if necessary, to spell the best he can. Must be legible to one unfamiliar with original.

40. "You know what PAPER is?" "And CLOTH?" "Are they the same (or alike)?" "No, why not?" "What is the dif-

ference?" Same procedure for BUTTERFLY and FLY, WOOD and GLASS. For the latter two the questions may be abbreviated, if S. has secured the idea: "What is the difference between ——?" (*Supplementary* pairs: *knife* and *fork, sugar* and *salt.*) The distinctions should be made from memory. **Time: 2 minutes for 2 of the 3.**

Age 9.

41. "What DATE is it to-day?" If necessary: "What *day* of the week (or: which one of the week days)?" "What *month?*" "What day of the *month* (*number* of the day)?" "What *year?*" Date (day of month) may be three days wrong.

42. "Now tell me the names of all the days of the week (week days) in the right order as fast as you can." "What do we call the week days? Now quickly." May start on any day. No prompting. **Time: 10 sec.** (*Supplementary* questions: "How many days in a week?" "If to-day is Monday (or Thursday, or Saturday) what day was yesterday?")

43. "Suppose that we play store a while. You are the storekeeper and I come to your store to buy 4 cents' worth of candy (or gum, peanuts, etc.), and give you this quarter (or 25-cent piece). How much change (money) would you have to give me back? There is the money, now pick out the change and hand it to me." If S. says 21 cents, reply: "Good, now count out the money." Place on the table, face up, without overlapping, 13 pennies, 5 nickels, and 3 dimes. S. must actually count out the change. The test is in need of standardization. E. may try 25 cents — 6, or 25 cents — 5, or 25 cents — 7 (25 cents — 9 is too hard); or $1.00 — 80 cents, or two dimes — 4 cents, or 6 cents. The latter is somewhat awkward, since we do not hand out two dimes in a 4-cent or 6-cent purchase.

44. Same as test 23. CLASSIFICATORY DEFINITION passes (giving class term or superordinate concept); *e.g.,* a table is a piece of furniture, a chair is a movable seat, a fork is a table or eating utensil, a horse is an animal, or a four-footed animal that pulls, a mama is a mother, or a woman with a child.

45. Same as 35. SIX memories pass.

46. Place the boxes fairly near together but out of correct order in a row before S. "Here we have five boxes, all looking alike but none weighing the same. There is a small difference in the weight of all of them. I want you to lift them this way (see test 16), and give me the one that feels the heaviest. Feel

carefully." After S. has selected the heaviest: "Now give me the heaviest one of the four." Then: "Now the heaviest of the three," etc. E. places boxes on table in the order selected by S., and makes a record of each trial, (paste initials of weights on under side: S (six), N, T, F, E). S. may be allowed to revise. ("Are you satisfied?" "If you like, lift them rapidly again"—in the order in which selected). Use 6, 9, 12, 15 and 18 grams. Boxes must be indistinguishable. **Time: 3 minutes for two correct** in three trials if necessary. (*Supplementary:* number of mistakes = the number of changes needed to give the right order, from 2 to 12.)

Age 10.

47. "Tell me the names of all the months of the year in the right order as fast as you can." "What do we call the months?" May start with any month. No prompting. One omission or inversion allowed. Verbatim record. **Time: 15 sec.**

48. "What is that?" Or: "What do you call this coin (or bill)?" As in test 34. Use 1 cent, 5 cents, 10 cents, 25 cents, 50 cents, $1., $2., $5., and $10.

49. "I want you to make up a little sentence in which you must use the words, BOY, RIVER and BALL (or *New York, money, river;* or *girl, dollar, lake*). You can make the sentence long or short and you can use any other words that you like, but you must use the three words, boy, river and ball." Or: "Tell me something about a boy, a river and a ball, all in one sentence." If S. stops with two of the words: "But you must also say something about ball (or whichever word is omitted) in the same sentence. Now try again." The sentences need not be real but should not be absurd. A COMPOUND SENTENCE with TWO DISTINCT IDEAS (two co-ordinate phrases) passes: *e.g.,* "The boy crossed the river, and went to a ball." "New York has several rivers, and very much money." Three sentences or three independent clauses count failure; *e.g.,* "the boy is strong; the river is wide; and the ball is round." Cf. 52. **Time: 1 minute.**

50. Ask S. moderately, slowly and distinctly the following questions (one repetition allowed if necessary): "What should you do?" (or: "What ought you to do?"):

(1) "When you miss a train?"

(2) "When a friend hits you without meaning to?"

(3) "When you break something that belongs to somebody else?"

(4) "When you are on the way to school and find that it is later than usual (or notice that you'll be late for school)?"

(5) "Before you take part in something important (or in some important doings)?"

(6) "What should you answer when asked to say what you think (or give your opinion) about someone you don't know very well?"

(7) "Why should we forgive a wrong done by someone when he is angry (or when he is mad) more quickly than when he is not angry?"

(8) "Why should you make up your mind about (judge) a person by his *actions* instead of by his *words* (or by what he *does* instead of what he *says*)?" Record answers. Five correct pass. **Time: 20 sec. each.** Use judgment in marking. Illustrative replies: (1) +: Wait for the next. Take another. —: Hurry. Go to next station. Walk. (2) +: Forgive. Excuse. Don't be angry. Don't cry. Don't do anything to him. Don't tell mother. Say nothing. Tell him to be more careful next time. —: Hit him. Cry. Tell mother or grown ups. Get angry. Avoid him. (3) +: Apologize. Offer to pay, or buy another. Fix it. —: Run away. Let it lie. Let him break something of yours. Weep. It is a shame. (4) +: Hurry, run. If S. says: "Ask pardon of or tell teacher," give chance to correct by emphasizing: "When you are still on the way?" —: Go home. Go the next session. Cry. Think over what to say. Get up earlier. Ask what time it is. (5) +: Prepare. Think it over. Get ready. Practice. Ask someone. —: See if you have time. Ask if you dare. Say you'll do it. (6) +: I don't know. I don't know him. Say nothing. Say what I know. —: I don't know what his name is. Ask what his name is. He is good, or he is bad. (7) +: Because when angry we act without thinking, can't control ourselves, not responsible. —: Because we ought to forgive. The Bible says so. (8) +: Actions speak louder than words. Can see what he does. May not mean what he says. —: Because he is wrong.

Supplementary problems: the following may, after trial, be fitted into their proper ages. Some of the above are too easy, others too hard for age 10. "What ought you to do?" (1) "When you feel sleepy?" "Cold?" "Sick?" (2) "When somebody has stolen something (or your pencil, knife, ribbon, etc.) from you?" (3) "When somebody has told a lie on you?" (4) "When the house you are living in catches fire?" (5) "When somebody says he is sorry (begs pardon) because he has hurt (offended you)?" (6) "When you have been punished although you have done nothing wrong?" (7) "When you want to buy something (cap, ball, dress, doll, etc.) but don't have the money?" (8) "Why is it easier to *say* that you'll do something than to *do* it?"] The first sets in both series are easier than the second.

50a. "Repeat: '7 1 9 6 5 3.' Or: '4 8 7 2 5 1.' Or: '3 7 6 9 8 2.'" See test 9. Six digits.

Age 11.

51. "I am going to read you some sentences in which there is something silly (foolish, or absurd, or a catch). Listen carefully, and try to tell me what the nonsense is." If necessary: "Can you say that?" "Why not?" If answer is unclear: "How should it read?"

(1) "Yesterday there was an accident on the railroad, but it wasn't serious; there were only forty-eight killed." (2) "The police found yesterday the body of a young girl cut into eighteen pieces; they think that she killed herself." ("Do you think so?") (3) "I have three brothers, Paul, Ernest and myself." ("Who were they then?") (4) "A poor carpenter fell, broke his head and died. They have taken him to the hospital, but do not think that he will recover." ("What did they do that was foolish?") (5) "Someone said: 'If I should kill myself, I wouldn't do it on Friday, because Friday would bring me bad luck.'" Speak clearly, slowly and with expression. **Time: about two minutes for three correct.**

Illustrative marking: (1) +: Forty-eight are many. That was serious. —: It can't be serious. It might have been worse. (2) +: Could not cut herself into eighteen pieces. —: Somebody may have murdered her. She wouldn't kill herself. (3) +: You have only two brothers. You cannot be your own brother. 'Myself' is no brother. Should not say 'myself.' —: Say 'I' instead of 'myself.' Place 'I' before the two brothers. (4) +: He is already dead. A dead man can't recover. Should not have taken a dead man to the hospital. —: They can cure him if he has not hurt himself badly. He cannot live. (5) +: If you kill yourself the day doesn't matter. Friday cannot bring bad luck to a dead man. —: That is superstition. Friday is no more unlucky than any other day. He wouldn't commit suicide.

[*Supplementary* list. After due trial some of the following should prove available at some level: (1) "Last night I saw a man in the street, with his hands in his pockets and twirling a cane." (2) "Next Christmas was a beautiful day, and we received many presents." (3) "Last Friday two of my friends called upon me. In the evening all four of us went to the theatre." (4) "It would take us all day to walk from New York to Chicago." (5) "Johnny bought a little rubber ball. He paid $1.00 for it.]

52. Same as test 49. SIMPLE SENTENCE (SINGLE IDEA), or complex co-ordinated sentence, passes, thus: "The boy threw the ball into the river"; "As I was walking in New York, I found money near the river."

53. "I'm going to give you a few minutes in which I want you to speak as many single words as you possibly can; not sentences, but *single* words; any words at all, just as they come, like *school,* or *dog,* or *cap,* or *grass.* Speak aloud. Now, remember: just as fast as you can." If S. stops: "Don't stop." "More yet." Verbatim record. **Sixty words exclusive of duplicates, in three minutes.**

54. "You know what KINDNESS means?" "What does it mean?" "Tell what it is to show kindness." If necessary: "Give an example." Allow time as long as S. reflects. Same for CHARITY and JUSTICE (JEALOUSY). Two correct, with essential idea (phraseology immaterial): *kindness* requires notion of goodness, affection, sympathy, helpfulness; *charity,* of aid rendered unfortunate people; *justice,* of law or rule or treatment according to deserts, fairness. Justice is to be just = —.

55. "Here is a sentence (show the first one) in which the words are all mixed up (or are out of place). I want you to read it through aloud, and then put the words together (orally) in the right order, so that they make sense." Or: "Read these words aloud." After S. is through: "Did they make any sense?" "No, why not?" ("out of order"). "Good, now put them together in the right order." If S. fails on first sentence, E. may arrange it for him, but no further aid. Show sentences singly. Two **satisfactory. Time: 1 minute each.**

a defends dog good
his bravely master

to asked paper the I
teacher correct my have

evening for we last
park started the early

Age 12.

56. "Repeat: '2 9 6 4 3 7 5.' Or: '1 6 9 5 8 4 7.' Or: '9 2 8 5 1 4 6.'" Directions in test 9. **SEVEN digits.**

57. "Do you know what a rhyme is?" "No? It's a word that sounds like, or ends like another word; as *cat* like *pat,* or *fat,* or *rat.*" "Now give me three words that sound like BALL (or COY, DAY, MILL)." **Time: 1 minute for three rhymes with one word.** Trials with two words.

58. "Repeat: 'The other day I saw in the street a pretty dog who carried in his mouth a basket of strawberries.' Or: 'Johnny likes to go on visits to his grandmother, because she always tells him many funny stories.' Or: 'It should be the wish of every child to grow up to become an honest and useful man or woman.'" See test 8. TWENTY-SIX syllables. One out of 3 correct.

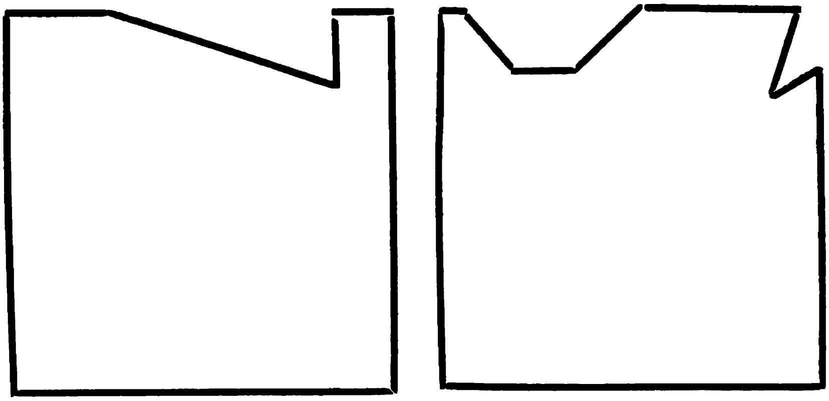
59. "Here are a couple of questions that I want you to try to answer. Now listen. 'A girl who was walking in the woods in a park, saw something hanging from the branch of a tree that made her so much afraid that she ran to the nearest policeman, and told him what she had seen.' What do you think she saw? What was it?"

"'My neighbor has been having strange visitors. First came a doctor, then a lawyer, and then a preacher.' Why did these three go to his house, the one after the other? What happened there?" Both answers must be correct: (1) +: A body. A corpse. A man has hanged himself. (2) +: Some one is dying.

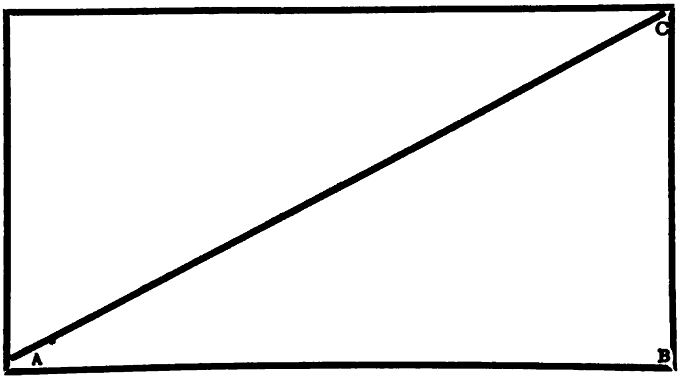
Age 13.

60. Have on hand a supply of paper sheets, about 5 or 6 inches square. "Watch what I do. Now I fold the paper once this way (into halves). Now once that way (at right angles so that the paper is quarto-folded). Now I cut off a piece here (a triangular hole, about 1 x 1 inch, in the middle of the closed edge), and now I cut off this corner (the partly closed corner on the same edge). How would the paper look now if I should open it like this (demonstrate with a similarly folded but uncut paper)? Try to imagine that you can see it open like this paper, and draw it the way you think it will look open (or draw the holes as they will look when the paper is open)." Cut with scissors. Do not show excised triangle, nor indicate how many diamonds there are. I have given + on one diamond.

As children who mingle are likely to coach one another, it is advisable to supplement the test, when used in the same school or district, by using one or the other of the following variant forms, cut similarly in the closed edge of the twice folded paper:



61. "Suppose I should turn this lower half (pointing to ABC) around, and place it against the upper half (pointing), so that this corner (pointing to C) would touch that corner (B), and so that this edge (BC) would touch this edge (BA); what would the new card (form) look like then? Now I'll remove this lower part (place it a short distance from the other, in the original position), and I want you to try to imagine that you see it placed as I have said, and draw the new form. Begin by drawing the upper half the way it is lying." "Good, now the other half the way I said." Speak clearly. One repetition allowed. No further aid. + if angle at B is approximately correct and if AB is longer than BC.



62. "I'm going to give you pairs of words which either mean pretty much the same thing, or which sound somewhat alike, but have a different meaning. I want you to tell me how they differ. What is the difference between?" PLEASURE and HONOR.

EVOLUTION and REVOLUTION. POVERTY and MISERY. EVENT and ADVENT. PRIDE and PRETENSION.

+ if 3 of 5 are correctly distinguished (if some legitimate difference is pointed out, however crude the language, or if the difference is satisfactorily illustrated).

Suggestions and General Directions for Administering the Tests.

1. Make yourself thoroughly familiar with the tests, their intent and technique, before attempting to administer them. Best of all, attend a demonstration clinic by a psycho-clinicist who has become expert in their use. The fact that the tests do not require delicate instruments of precision, does not obviate trained skill in their administration.

2. Attempt to win S.'s confidence and set him at ease at the very outset. A kindly greeting, a cheerful manner, a sympathetic glance, an assuring smile, a pat on the shoulder, will melt the icy barrier with most children.

3. Encourage S., whether he does well or poorly, to do his best, by rather fulsome praise or lavish evidences of appreciation. Nothing equals liberal expressions of approbation for inciting a child to put forth his best efforts. These are *tests, not teaching* exercises. Do not criticise, blame, intimidate or arouse obstinacy. Be tactful and patient, and, above all, adaptable. Dispositions differ. There are some subjects who cannot be won by the arts of praise or cajolery; these must be aroused out of their state of unresponsiveness by other expedients. But it is only seldom that any subjects need to be prodded or threatened.

4. Give no aid other than such as is permitted in the various tests.

5. Adhere unvaryingly to the conditions laid down in each test. Eventually the conditions will be multiplied and improved. The *supplementary* tests, which are extraneous to the Binet-Simon scale, may be given at the discretion of E.

6. It is not necessary to follow any invariable order in giving the different tests. But it is better to start with tests beneath rather than above S.'s mental level. Initial impressions count for much. Difficult tests at the outset tend to discourage S. at the beginning, and thus affect adversely the later tests. The following order is suggested for medium or high grade S's.: numbers 35 (45), 10 (32), 46, 42, 41, 47, 34 (48), 43, 49 (52), 50, 51, 54, 23 (44), 55, 31, 14, 50a, or 56, 58, 21, 17a, 53, and 57. It is inadvisable to give 57 *immediately* before 53, as some fall

into the error of supposing that only rhymes are wanted or groups of words in triplets; or 10 *immediately* before 35 as some S's. confuse what was read with what was seen in the pictures, (otherwise 10 makes a good initial test); or 43 before 34 for obvious reasons.

7. Test S. extensively both below and above the mental age which he passes, particularly above. Give *all* the higher tests unless it is obvious beyond question that the tests are too difficult. Do not fall into the error of taking things for granted, nor acquire the habit of omitting difficult tests because of indolence. Only by wide-range testing shall we be able to arrive at a satisfactory individual diagnosis or be able satisfactorily to criticise or revise the scale.

8. Never examine S's. in groups; the work is clinical. Ordinarily do not examine in the presence of spectators; S. should be alone with the examiner, or with the examiner and his assistant.

9. The tests should be carried out in a room that is well-lighted and free from interruptions or noise. Some tests require absolute quiet.

10. Always record as many details of S.'s verbal or other reactions, as time permits; they may eventually attain a significance not contemplated in the tests themselves. Verbatim records are the ideal to be approximated.

11. In timing measure the actual time of the *act of execution*. This assumes that S. begins to respond as soon as the test has been explained, particularly in tests 36, 37, 38, 42 and 47. But if S. reacts very slowly, it is advisable to record both the time required to *start* and the time required to *perform*. It is well to avoid a too pedantic insistence on the time conditions. Some S's. are slow but thorough. With such, a slight overstepping of the time limits is immaterial.

12. E. may read the selection in 35 at the normal rate for such S's. who are unable to read because of defective vision, but whose intelligence justifies the belief that they could read if they had good eyes.

13. The attempt has been made to standardize the sentences in 8, 17a, 21 and 58 by using only single, simple concrete sentences with a familiar context.

14. The following tests are probably *too easy* for the age standards to which they are assigned: 25, 33, 37, 42, 47, 48, 50, (first set), and 57. The following are probably *too difficult:* 18, 21, 39, 43 (as 25 cents — 9), 44, 45, 46, 53, 54, 55, 58-62. The

need to verify these probabilities, and to fit all the tests to their proper ages, is urgent.

15. The following test, given in connection with 33 or 43, proved suggestive among feebleminded epileptics: "Which would you rather have, 73 cents or 59 cents (or 62 cents or 48 cents)?" Possibly it is adapted to some age standard.

16. The following symbols may be used in *marking* the records: plus sign (+), passed; minus sign (—), failed; ½, one-half credit (in rare instances in which the responses are not entirely wrong); ?, evaluation of response uncertain; !, absurd response; I, ignorance or inability to comprehend the question or test; T, timidity; R, resistance; In, inattentive. Credit the examinee (S.) with the age in which all the tests, or all but one, are passed.

Credit one year for every (additional) five tests passed at higher levels, or .2 year for each advance point (*i.e.,* multiply the advance points by two and express as a decimal. Thus 5 3-5 = 5.6). Record the chronological ages in years and months (thus 8^5), and the mental ages in years and tenths (decimals). The record should be made on a specially prepared record form.

Personal, Hereditary and Environmental Data.

It is particularly important to secure the following data in the study of defectives.

Personal Factors (and Anamnesis).

Full name Sex Born Birthplace
Nationality Grade Degree and character of education: schools attended months attended
Years in each grade Years retarded Nature of reported school capacities Incapacities
Character of school work at present Present health
Infant and childhood diseases and accidents
Vaccination *Stigmata of degeneration: Anatomical* (anomalies of head, face, teeth, ears, limbs, genital organs, skin, body in general)

Physiological (anomalies of sensory, motor, genito-urinary, speech and instinctive functions, and pubertal retardation)

Psychic (feeblemindedness, aberrations, disequilibration, one-sided talents, sexual perversion, moral delinquency, eccentricity, delusions, imperative ideas, illusions, psychoses)

Visual acuity Auditory acuity Manuometry Vital
capacity Height Weight Nutrition Circulation
Pulse Temperature
Reflexes Temperament and disposition Attitude
toward others Deportment Mental and
physical habits, good bad Complexion
Color of eyes of hair

Hereditary Factors.

Birthplace of father of mother Number
of brothers of sisters Mental and physical conditions
of brothers and sisters Order of birth
Weight at birth Condition at birth Premature
delivery Condition of mother at birth Mother's
age at birth Father's age The following data regarding
father, mother and blood relatives: longevity, diseases, deformities,
neuroses, psychoses, dependency, vagrancy, drug and
alcoholic habits, criminal tendencies, sex perversions, age at death,
causes of death

Environmental Factors.

Home conditions sanitary economic
moral Father's occupation Mother's occupation
Character of community, hygienically, morally,
educationally Of street influences
Of amusement resorts Of playmates
and associates

The Psychological Clinic Classified Advertising Department

ADVERTISING RATES

Hotels and Resorts, Apartments, Summer Camps, Tours and Travel, Special Schools, Educational Institutions, twenty-five cents per agate line. Not less than four lines accepted. In calculating space required for an advertisement, count an average of six words to the line unless display type is desired. The first word of each advertisement is set in capital letters without additional charge. Other words may be set in capitals, if desired, at double rates. Special headings appropriate to the department may be arranged for upon application.

ORDERS AND COPY FOR CLASSIFIED ADVERTISEMENTS

must be received with remittance ten days before the month in which it is intended the advertisement shall first appear. Address ADVERTISING DEPARTMENT, THE PSYCHOLOGICAL CLINIC, Thirty-sixth and Woodland Avenue, West Philadelphia.

MEDIA, PENNSYLVANIA

THE FARM SCHOOL

A Private School for Boys Requiring Individual Instruction or Discipline

Situated on a farm of fifty acres. Summer and Winter sessions.
Limited to six boys. A systematic routine of school work, out door work, and play, insisted upon. Constant personal oversight.
Summer term in part, spent on the Maine coast, where school work is still kept up, although the life is freer and rougher, with more time devoted to recreation.
Boys entered for whole or part of year. For particulars, address,
Phone: Media 144 y. H. C. PORTER, Ph.D., R. F. D. 3, Media, Pa.

PHYSICAL TRAINING FOR BOYS

A Book written specially for teachers in schools that have no gymnasium; containing many simple, effective exercises, fully illustrated.
By CHARLES K. TAYLOR.

Price 55 cents postpaid

FOR SALE BY
STRAWBRIDGE & CLOTHIER
Philadelphia, Pa.

The
John C. Winston Co.

Commercial Printing of the highest standard only.

Educational, Literary and Scientific publications our specialty.

The Mechanical equipment is of the latest.

Printers
Publishers
Bookbinders

Best Material and Workmanship

1006-1016 Arch St., Philadelphia

Psychological Monographs

A SERIES OF EXPERIMENTAL STUDIES IN PSYCHOLOGY AND PEDAGOGY

EDITED BY
LIGHTNER WITMER
University of Pennsylvania

1. Spelling in the Elementary School. An Experimental and Statistical Investigation. 1902. 98 pp. 16 figures in the text and an appendix of 26 tables. Price: cloth, $1.25; paper, $1.00.
   By Oliver P. Cornman, Ph. D., District Superintendent of Schools, Philadelphia.

   "Dr. Cornman has made an extensive investigation of the ability of school children in Philadelphia schools in the subject of spelling, and studied his results with such care that his work deserves special attention." Professor W. H. Burnham. *The Pedagogical Seminary*. Vol. VIII. No. 4, Dec., 1906, p. 491.

2. The Sensation of Pain and the Theory of the Specific Sense Energies. 1902. viii + 87 pp., with one table and two figures in the text. Price: paper, $1.00.
   By Anna J. McKeag, Ph. D., Professor of Pedagogy, Wellesley College.

   As a result of an experimental investigation of the reaction of a number of subjects to painful stimuli, the author first presents an analysis of the pain judgment, which is presented either as a general or unforced judgment, or as a judgment in which the subject is required to give expression to the perceived qualitative distinctness and discreteness of the sensation. The relation of pain and touch to various stimuli is given consideration. In an important chapter a resume of the history of the theory of the specific sense energies is given, with special reference to the sensation of pain, and an examination is made of the physiological basis of pain in the periphery and nerve centres.

3. The Application of Statistical Methods to the Problem of Psychophysics, 1908. 221 pp., including 94 tables. Price: paper, $2.50.
   By F. M. Urban, Ph. D., University of Pennsylvania, Philadelphia.

4. Two Experimental Studies of the Insane. I. The Train of Thought. II. Some Physiological Conditions accompanying States of Depression. 84 pp., 3 inserted tables. Price: paper, $1.00.
   By Clara Harrison Town, Ph. D., Resident Psychologist at Friends' Asylum for the Insane, Frankford, Philadelphia, Pa.

5. A Clinical Study of One Thousand Retarded Children in Camden, N. J.
   By J. D. Heilman, Ph. D., Professor of Psychology, State Normal School, Greeley, Colorado. 106 pp., including 23 tables. Price: paper. $1.00.

6. Extent and Causes of Retardation in the Reading (Pa.) Public Schools in December, 1910. A Statistical Study.
   By Aaron Moyer Snyder, Ph.D. 72 pp., including 44 tables, and 14 figures in the text. Price: paper, $1.00.

THE PSYCHOLOGICAL CLINIC PRESS
Woodland Ave. & 36th St. Philadelphia, Pa.

This book should be returned to the Library on or before the last date stamped below.

A fine of five cents a day is incurred by retaining it beyond the specified time.

Please return promptly.

DUE ~~APR 29 '48~~ A

CANCELLED

NOV 03 '69

JAN 28 '72 H

2671569

4037547

3 2044 105 185 532